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This high school agricultural occupations teacher's guide was developed as part of a pilot program and tested at Reidland High School. The course objective is to develop skills and understandings needed in agricultural supply sales and service. Units are (1) Opportunities in Agricultural Occupations, (2) Orientation to the Training Program, (3) Organization of Distributive Businesses, (4) Agricultural Mathematics, (5) Human Relations and Personality Traits, (6) Store Skills, (7) Salesmanship and Selling, (8) Feeds, (9) Seeds, (10) Fertilizers, and (11) Agricultural Chemicals. The outline for each unit contains (1) learnings needed to reach the objective, (2) suggestions for introducing the unit, (3) student goals, (4) information for providing the class instruction, (5) teaching suggestions, (6) suggested student participation, (7) decision making ideas, and (8) references. The one-year course should be used by teachers competent in agricultural sales and service. Pre-tests and post-tests for each unit, illustrations when needed for clarity, and evaluative questionnaires for completion by the teacher, student, and the employer or supervisor are included. (DM)

C1

COURSE OF STUDY

IN

AGRICULTURAL OCCUPATIONS

Area: Agricultural-Supply Businesses
—Sales and Service

Department of Vocational Agriculture, Reidland High School
Paducah, Kentucky

1865

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DEPARTMENT OF AGRICULTURAL EDUCATION
COLLEGE OF EDUCATION
UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY

January, 1967

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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COURSE OF STUDY

IN

AGRICULTURAL OCCUPATIONS

(Agricultural-Supply Businesses
-- Sales and Service)

FOR

Reidland High School
Department of Vocational Agriculture

A DEMONSTRATION CENTER

Under Contract with:
Division of Adult and Vocational Research

Prepared
by
Harold Binkley

Department of Agricultural Education
College of Education
University of Kentucky
Lexington, Kentucky

January, 1967
(Revised)

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MEMORANDUM

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The Ohio State University
980 Kinnear Road
Columbus, Ohio 43212

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(Address) Lexington, Kentucky 40506

DATE: May 24, 1968

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PREFACE

Kentucky has many capable boys taking vocational agriculture who will not, for one reason or another, attempt to become established in farming. Likewise, there are many farm boys who are not taking vocational agriculture who should. These farm boys do not take vocational agriculture because they, their parents, school people, and others think that the training leads only to farming. Vocational agriculture leads to many vocations in the broad field of agriculture.

The people in vocational agriculture and the people in agricultural businesses know that abilities in farming, developed through training in vocational agriculture, are definite assets to those who enter agricultural occupations. In addition, there has been for sometime a great need for a program in vocational agriculture which makes use of the abilities in farming in other agricultural occupations.

In many states there are twice as many jobs in other agricultural occupations as in farming. In some states the ratio is three to one. The 1963 Federal Vocational Act recognized this situation and stipulated that vocational agriculture funds may be used to prepare for any occupation involving knowledge and skill in agriculture whether or not such occupations involved work on the farm. Furthermore, this legislation provides for directed or supervised practice, either on-farm or off-farm and that vocational agriculture be broadened to include agricultural occupations other than farming.

The joint staff in agricultural education (supervisors and teacher educators) in Kentucky met in October and November, 1963, and developed a philosophy and criteria for pilot programs in agricultural occupations. A pilot program was started in the Department of Vocational Agriculture at Reidland High School in January, 1964, shortly after the passage of the 1963 Vocational Education Act.

The instructional program at Reidland is designed to prepare students for "job entry" in agricultural-supply businesses. The course of instruction is based on the competencies needed in the businesses for "job entry" and advancement. The competencies were identified by surveying agricultural businesses under the direction of Dr. Harold Binkley. The businesses surveyed sold agricultural supplies and rendered services in the areas of seeds, feeds, fertilizers, and agricultural chemicals.

The units of instruction in this course of study are based on competencies needed by employees in agricultural-supply businesses -- sales and service. The course of study should make a significant contribution, in this area of agricultural occupations in Kentucky and the nation, as vocational agriculture moves to provide programs to serve the total agricultural industry.

Richard L. Winebarger, Principal
Reidland High School
Paducah, Kentucky

M. M. Botto, Director
Agricultural Education
Kentucky

ACKNOWLEDGEMENTS

The Kentucky staff in agricultural education are acknowledged for their contributions to the development of this course of study. The combined staff -- supervisors and teacher educators developed a philosophy for the pilot programs in agricultural occupations which were conducted during the period: January 1, 1964 -- June 30, 1965. The combined staff conducted, under the direction of Dr. Harold Binkley, a survey of competencies needed by employees in agricultural-supply businesses. The results of this survey were used as a basis for developing the units of instruction in this course of study.

Unit outlines used by the teachers of the pilot programs were developed by: Herbert Bruce, Jr., fertilizers; William Bingham, feeds; Floyd Cox, seeds; and George Luster, organization of distributive businesses.

The teachers of the pilot programs -- J. P. Truitt, Lafayette High School; James Golden, Shelby County High; Ben Allen Burns, Daviess County High School, and Clayton Riley, Reidland High School, offered helpful suggestions for revisions and refinement. During the school year, 1965-66, Clayton Riley developed many worksheets and related materials for student use. Charles Byers correlated and cross referenced these materials in this revised course of study.

INTRODUCTION

The teacher of agriculture determines the needs of his students and builds a course of study to meet these needs. This course of study is for senior students enrolled in agricultural occupations -- sales and service. The course of study includes, by units, 1) major teaching objective, 2) learnings to be secured, 3) content, 4) suggestions for handling the unit, 5) references, 6) worksheets, and 7) other materials.

A modified problem-solving procedure should be used in securing many of the learnings in this course. The teacher should cause the students to have problems, state them, and analyze them. The teacher can then follow with references, his experience, class discussion, and case problems. A common fallacy in teaching an occupational class is: teaching "about" an occupation, rather than providing training in the occupation. This can be corrected to a large extent by:

1. Making effective use of demonstrations.
2. Providing supervised practice in the classroom.
3. Working closely with the cooperating employers in developing specific abilities in which students have opportunity for practice.

In much of the teaching, the problem to be solved (or topic to be discussed) the next day, should be blocked out at the end of the class period. This will allow students to secure additional information at their work centers which will give meaning to the class discussions. Demonstrations should involve the abilities to be learned, followed by supervised student practice. Correction of errors during the practice builds confidence in students. Teaching aids for use in giving demonstrations and providing practice exercises are at the end of each unit. The teacher should supplement these suggestions from his observations and experience.

The teacher will find it helpful to set up a small store in the corner of his classroom where materials can be displayed and where students can practice stocking, building displays, selling, and other skills. Local businesses will be eager to supply the teacher with supplies, materials, and teaching aids. The teacher will need to secure sales tickets, scales, and cash registers to make his teaching realistic and to provide student practice. A tape recorder should be used to record student participation in the many aspects of sales techniques, to correct errors, and to stimulate self improvement.

The units in this course of study are not listed in the order of importance or the sequence they should be taught. The cooperating employers should have some say in when certain units will be seasonal for them. Example: teaching the unit on Agricultural Chemicals in the fall would not be as effective as in the spring when the centers are moving chemicals.

This course of study should be used only as a guide. The teacher should adapt the units to his local situation, not adapt the situation to the units.

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BLOCK-OUT OF COURSE OF STUDY
(Agricultural Occupations)

AGRICULTURAL-SUPPLY BUSINESSES -- SALES AND SERVICE

Unit	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Opportunities in Agricultural Occupations	3									3
Orientation to the Training Program (Including Applying for Job)	10									10
Organization of Distributive Businesses	5---	---6								11
Agricultural Mathematics (May be Integrated in Other Units)		12--	---8							20
Human Relations and Personality Traits			12--	---3						15
Store Skills				10						10
Salesmanship and Selling				7--	--15					22
Feeds						10				10
Seeds						4	6			10
Fertilizers							8--	---8		16
Agricultural Chemicals								8--	--10	18
Evaluation									4	4
Timely Group Problems					4	4	4	4	4	20
FFA	2	2				2	2			8
Total	20	20	20	20	19	20	20	20	18	177

UNIT: OPPORTUNITIES IN AGRICULTURAL OCCUPATIONS

Number of class periods ________________ Month(s) ____________________

Major objective to be attained through the unit: To develop an understanding of the broad field of agriculture and the many vocations open to young men with good backgrounds in agriculture.

Learnings Needed to Reach the Objective

(This unit is for senior students who will not likely move into establishment in farming. Change these learnings to make them fit the needs of your students.)

1. Understand the importance of farming, and other agriculture, to our economy

   Farming, as a whole, is one of the most efficient operations in our economy.

   a. Through research, education, and farm mechanization, farmers are using new and improved methods of producing food.
   b. Farm output has been boosted as much in the past 20 years as it was in the preceding 125 years.
   c. In the past 15 years the increase in output (total and per man-work hour) from farming has exceeded that of industry.

   Farming is our most important industry.

   a. It is the nation's largest single industry.
   b. Total capital investment in farming and farm business is over $200 billion -- an amount equal to 3/4 of the assets of all the corporations in the United States.
   c. Farmers spend approximately $30 billion for production supplies and services each year. They are large users of petroleum products, fertilizers, chemicals, motor vehicles, machinery, equipment, etc.
   d. Farming provides products for aiding under-developed countries, and helps in the struggle to keep independent nations of the world free of Communism.
   e. Abundant food is a deterrent to war. Most great conflicts of man arise from the need for the necessities of life which come from the soil.

   Farming creates many job opportunities in related businesses and industry.

   a. Perhaps 40 percent of all workers in the United States owe their employment, at least in part, to farming. Their jobs are in agriculture or related to agriculture.
   b. Processing, transporting, and marketing food for over 200,000,000 people is an enormous operation.
   c. Businesses, farming occupations, and industries are dependent upon each other as a key position in their relationship.

Is farming a declining industry?

- a. Because the number of people producing food has declined, some people have erroneously thought farming to be a declining industry.
- b. The volume of output by an industry is perhaps a better measure of its importance than is the number of workers. The total output of farm products is over one and one half times as large today as it was 20 years ago. This output must yet be increased if we are to feed 225 million people by 1975, as is estimated by population experts.
- c. As fewer and fewer farmers provide more and more people with the basic necessities of life, farming becomes more, not less, important. Should 2 percent of us be able to feed the rest of us (some think this is possible), then the welfare of the nation will depend upon these 2 percent. They are like the point on which our economic "top" spins. If the point becomes dull (inefficient), the whole economy will wobble. How important these 2 percent will be!
- d. As fewer people farm, farms increase in size, and investment in farming increases, farming demands a higher qualified worker. Do we consider an industry declining when the qualifications demanded of its workers are improving? When the workers are improving and are becoming more efficient in an occupation, we say that occupation is on the move.

Agriculture, other than farming, is becoming more important.

- a. The term agriculture is much broader than farming.
- b. The term agrindustry has broadened the meaning of the term agriculture.
- c. There are job opportunities for about 15,000 college graduates in agriculture each year. The agricultural colleges graduate about half enough persons for these opportunities.
- d. Everyone has an interest in agriculture.

2. The uses one may make of what he has learned in vocational agriculture up to now.

What has been learned in vocational agriculture up to now?

- a. In vocational agriculture boys have developed attitudes, understandings, and abilities needed in farming and related agricultural occupations.
- b. In vocational agriculture boys have learned many of the sciences that contribute to agriculture. Agriculture is a science, and many basic concepts of the sciences are necessary to learn for efficient farming and successful employment in other agricultural occupations.
- c. Through the FFA, boys in vocational agriculture have learned to be good citizens. They have developed leadership abilities and participated in group activities which foster cooperation and team work.
- d. Boys in vocational agriculture have developed skills in farming and other phases of agriculture that lead to good work habits,

and pride in a job well done.

e. Boys have developed skills and understandings in farm mechanics.
f. Boys in vocational agriculture have learned to solve problems by thinking logically and objectively.
g. Boys have learned about the business of farming. Through managing their farming programs, they have developed skill in financing, record keeping, and efficiency.

What use can be made of the learnings that have been acquired up to now?

a. Training in vocational agriculture has greatly benefited boys who are to become farmers.
b. Those who plan to become professional workers in agriculture (teachers of agriculture, county agents, soil conservationist, researchers in agriculture, etc.) have benefited from the training.
c. Those who plan to go into other agricultural occupations have benefited from training in vocational agriculture.
d. Farm boys who plan to go to college will benefit from training in vocational agriculture.
e. Vocational agriculture training is of value to boys who will become part-time farmers.
f. Vocational agriculture training is of value to those who, later in life, will get pleasure from gardening, growing flowers and caring for the home grounds. Others may produce some particular agricultural products as a hobby.

3. Become familiar with careers in agriculture other than farming

Approximately 26 million people work somewhere in agriculture.

a. About 8 million people work on farms.
b. About 7 million produce products for farmers or provide services for farmers.
c. At least 11 million workers are engaged in processing and distributing products from farms.
d. Agriculture is served directly or indirectly by about 500,000 scientists and research workers.

Jobs in agriculture are desirable, because:

a. They are important to everyone
b. They offer a bright future
c. They provide financial and personal rewards

There are over 500 distinct occupations in eight major agricultural fields. To fill vacancies in these occupations, about 15,000 college graduates in agriculture are required annually.

Agricultural Field	Number of Vacancies Each Year
Business	3,000
Education	3,000
Industry	3,000

Agricultural Field (Continued)	Number of Vacancies Each Year (Continued)
Farming (production)	2,000
Service	1,500
Conservation	1,000
Research	1,000
Communications	500

In many states there are twice as many jobs in the nonfarm part of agriculture as in farming. In some states the ratio is three nonfarm to one farming. Many of these jobs require post-high school specialized training and less than a college degree.

There are occupations in agriculture that permit one to:

a. Work with animals
b. Work with plants (and soils)
c. Engage in engineering
d. Work with people (teach, engage in business, write, etc.)
e. Engage in research
f.

Scientific and professional careers may be grouped in these categories:

a. Teaching (school and other)
b. Research
c. Extension service and conservation
d. Foreign service
e. Specialists
f.

Agricultural occupations may be broadly grouped in these areas:

a. Production of products
b. Business and industry
c. Service
d. Professions

Summary:

a. Regardless of how agricultural occupations are grouped, there are over 500 distinct vocations in agriculture from which one can choose.
b. Demands for employees in many agricultural vocations are not being met because of a shortage of qualified persons.
c. Agricultural vocations offer interesting, varied, challenging, and financial-rewarding careers.
d. The interests and abilities of a person are important in the selection of any vocation. Agriculture is no exception. (This is considered in the next learning -- Learning 4.)

4. To decide intelligently on an agricultural occupation

Factors in deciding upon an agricultural occupation

a. Description of the occupation
b. Duties of the workers
c. Working conditions
d. Training required
e. Personal qualifications desired
f. Outlook -- probable demand for workers and prospect for the future
g. Advantages and disadvantages
h. Earnings -- at start and probable future earnings
i. How get started in the vocation?
j. Advancement possibilities --does preparation and experience prepare a person for related occupations and careers?
k. Source of reliable information about the vocation

Consider the qualifications needed for success in different occupations in agriculture

a. Educational requirements
b. Work experience desired
c. Health and physical requirements
d. Personal qualifications (aptitudes, attitudes, work habits, degree of accepting responsibility, ability to work with others, dependability, morals, etc.)
e. Home background

Taking inventory of one's personal qualifications

a. Family background (consider social and economic factors)
b. Health and physical record
c. School and education record
d. Aptitudes and abilities, see EV-1, page 12
e. Interest
f. Motives, goals, attitudes
g. Work experience
h. Results of standardized tests, inventories, and check lists

Steps in making a choice of an agricultural occupation

a. Collect all possible information about the occupation. Boys should feel sure that they can meet the requirements for the occupation selected.

    - Consider the description of the occupation
    - Know the requirements for the occupation
    - Evaluate the rewards of the work (satisfaction and benefits received)
    - Consider the pitfalls in an occupation. Beware of overemphasis of these factors: appeal of glamour and adventure, social prestige, parental wishes, the short-run returns, too restricted a goal or ambition, the idea that "anyone can succeed in anything if he works hard," the appeal of "outdoor" work. Do not fail to consider the opportunities for employment. A common pitfall is failure to evaluate aptitudes fairly.

b. Make a self analysis to understand as fully as possible your personal abilities and interests.
c. Correlate the requirements of the vocation and personal qualifications for the work in order to arrive at a good choice of a vocation.

Carefully consider intermediate jobs which will contribute toward developing learnings for success in the chosen vocation.

5. How to proceed toward a career in agriculture

The occupation selected will determine the next steps that should be taken.

a. Some occupations require graduation from college with a degree in agriculture.
b. Some occupations demand continued study, but not necessarily in college or a college degree. Farming is an example in this category. Continued study may be in young-farmer and adult-farmer work. In all cases it will require much study if one is to be most successful.
c. Some occupations require on-the-job training, but not necessarily college work. For most of these occupations the best preparation is to do a good job of studying agriculture. Enroll in an agricultural occupations program while enrolled in vocational agriculture and make the most of the training.
d. Some occupations (especially the professions) may require advanced degrees from universities or colleges.

Where college work is required, these steps should be taken:

a. Get full information from colleges that offer work in agriculture that is needed for the occupation selected.
b. Consider these items in selecting a college:

-- the curriculum (what it teaches)
-- the qualifications and training of the teachers
-- the facilities to study and learn agriculture
-- the over-all educational opportunities at the college
-- the student life outside the classroom
-- housing
-- costs of attending
-- financial assistance that may be available
-- location

c. Contact the dean of agriculture early regarding the procedure to follow in entering college. Summer orientation is available at some institutions. This makes college entrance in the fall much easier.

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

The purpose of this unit is to help high-school seniors in vocational agriculture to understand the importance of agriculture and the many opportunities for careers in it, so that they will consider agriculture as a career.

Rather than declining, agriculture is expanding. While the number of those actually engaged in producing raw agricultural products is decreasing, the number of persons engaged in providing agricultural supplies and services, processing and marketing food and fiber, agricultural research, education, etc., is increasing. Just as a modern jet plane requires a small crew, but takes hundreds of specialists, mechanics, and factory workers to keep it in the air, agriculture today requires relatively few to produce food and fiber, but many are needed to provide materials and services needed in agricultural production, and to get the food and fiber to the consumer.

Population experts predict that a child born in this country today, when it reaches age 70, will live amid 500 million people in the United States. With this in prospect, the outlook for agriculture is indeed bright.

Agriculture is being "sold short" to many young people. Its image has been tarnished in the eyes of our youth by erroneous information. (Agriculture is a much more inclusive term than farming.) Few are telling high-school students the true story of the opportunities that abound in agriculture. Here are some things that need to be told: (1) Agriculture is a fascinating and challenging career. (2) Salaries in agriculture compare favorably with positions elsewhere which require the equivalent qualifications. (3) Job opportunities in agriculture exist everywhere -- 75 percent of all basic raw materials are of agricultural origin. (4) For each of the past several years there have been about 15,000 employment opportunities for graduates of agricultural colleges. Colleges have been able to supply persons to fill only about half of these opportunities.

When starting out to deal with this unit students should be led to recognize immediately that agriculture is not a declining industry, but an expanding industry. The number of persons engaged in producing raw agricultural products is decreasing but the number of persons engaged in providing agricultural supplies and services, processing and marketing food and fiber, agricultural research, education, etc., is increasing. There is a bright future for agriculture.

Specific information concerning opportunities in agricultural sales and service should be provided students.

Student Goals

All students should set as their goal to evaluate thoroughly and fairly agriculture (of which farming is a part) as a possible career. They should desire to devote their best effort to a study of the broad field of agricultural occupations as a basis for helping to decide intelligently on their life's work.

Providing the Class Instruction

The learnings in this unit should be secured by dealing with a series of problems. Problems similar to these may be used:

1. How important is agriculture to our economy?
2. What use can one make of what he has learned in vocational agriculture?
3. What are the careers in agriculture that require a college degree?
4. What are the careers that require less than a college degree?
5. What careers in agriculture have possibilities for us?
6. How should we proceed toward a career in agriculture?

Teaching Suggestions

The following teaching techniques and aids are suggested:

The imagination of students should be challenged to get them to see the opportunities in agricultural occupations and the use that they may make of the training.

Arrange for agricultural businessmen and representatives of the Local Employment Service to discuss opportunities in sales and service. Supervised practice in sales and service will help make the instruction meaningful.

Provide students with job descriptions to take home and read and discuss with parents and friends. This will help develop understanding and enthusiasm. Guidance counselors should be involved in helping to prepare the materials.

In dealing with learning #4 it is suggested that students complete EV-1. It should be pointed out to the students that a high score will not insure success, nor will a low score dictate failure. Students should see that their desires and interests may change during or after they have completed the training.

Student Participation

Have students develop a list of businesses in the community and region which sell and render services in feeds, seeds, fertilizers, and agricultural chemicals.

Have students make a list of the different kinds of jobs the employees in these businesses perform.

Have students select and write brief job descriptions and give reports to the class. Other reports should point out the value of the training to those who go on to college or a vocational or technical school.

Getting Decisions Made and Carried Out

Teachers of agriculture should help boys select careers in which they are genuinely interested and in which they have the ability to succeed. Careers should be discussed with boys and their parents on supervisory visits.

When boys are engaged in an agricultural occupation program in high school, the teacher must make meaningful supervisory visits and council with the cooperator to determine whether the boys are suited for the particular occupation. And, determine whether the boys can profit from advanced study in the area of their interests. Teachers should not lose contact with their former students when they enroll in college. Often teachers of agriculture can be of real service and help to former students while they are in college.

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"Intent of High School Vocational Agriculture;" George Weigers, Department of Agricultural Education, University of Tennessee, Knoxville

"Agricultural Occupations Information;" State Board for Vocational Education, Olympia, Washington

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"The Guidance Role of the Vocational Agriculture Teacher;" (1961) -- Source same as above

"It Takes All Kinds of People . . .;" Office of Information, USDA, Washington, D. C.

* "Agriculture is More than Farming;" National Vocational Agricultural Teachers' Association (copies are available from the Future Farmer Supply Service, Alexandria, Virginia, 15¢ per single copy)

"Guidance Through the Vo-Ag Teacher;" (1961) -- Agricultural Education Department, Montana State College, Bozeman

REFERENCES ACCORDING TO LEARNINGS

1. To understand the importance of farming, and other agriculture, to our economy	Handbook of Agricultural Occupations, pp. 4-5, 37-38 Kentucky Circular 563-A, pp. 1-6 Kentucky Miscellaneous 205, pp. 5, 9-10, 12, 14 Kentucky Miscellaneous 167-A, pp. 2-4 ____________________ ____________________
2. To understand the uses one may make of what he has learned in vocational agriculture up to now	Farming Programs, pp. 3-4, 9-12, 38-39, 61-62, 295-97 Handbook of Agricultural Occupations, pp. 17-34

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*Useful to students also

	"Choose Your Career in Agriculture"
3. To become familiar with careers in agriculture other than farming	Farming Programs, pp. 295-306 Handbook of Agricultural Occupations, pp. 40-41, 63-64, 68, 71, 81, 95-96, 118, 136-37, 171, 190, 217 Your Opportunities in Vocational Agriculture, pp. 50-61 "Careers in Agriculture" "Agriculture is More than Farming," pp. 3-15 "I've Found My Future . . . In Agriculture" "Choose Your Career in Agriculture," pp. 2-96
4. To decide intelligently on an agricultural occupation	Farming Programs, pp. 307-08 Handbook of Agricultural Occupations, pp. 8-14, 40, 62, 71, 80, 136, 173, 189-90, 215 Your Opportunities in Vocational Agriculture, pp. 61-64 "Careers in Agriculture" "Sales Careers -- What You Should Know About Them" "Career Service Opportunities in the U. S. Department of Agriculture," pp. 1-4 "I've Found My Future in Agriculture," pp. 1-2 "Choose Your Career in Agriculture" (Page inside front cover) EV-1 -- Self-Analysis of Interest in Sales Work
5. To proceed toward a career in agriculture	+ Progress Report 94 "I've Found My Future . . . In Agriculture" "Careers in Agriculture" "Choose Your Career in Agriculture," pp. 2-96 "Your Opportunity in Vocational Agriculture," pp. 65-69

+Teacher reference

EV-1

Name ____________________

Date ____________________

Score ____________________

SELF-ANALYSIS OF INTEREST IN SALES WORK

Which of these statements describe you? If the answer is "yes," draw a circle around the "Y." If the answer is "no," draw a circle around the "N," It is in your own interest to be as fair and accurate as possible in your answers.

1. I'd rather deal with things than with people . . . . Y N
2. I think mathematics is a very interesting subject . . . . Y N
3. I like talking to strangers . . . . Y N
4. I dislike group activities . . . . Y N
5. People find it easy to approach me . . . . Y N
6. I would like to do research in science . . . . Y N
7. I'd enjoy raising money for a worthy cause . . . . Y N
8. I prefer to be by myself . . . . Y N
9. I've more than average desire to own things . . . . Y N
10. I would like to design farm implements . . . . Y N
11. I would like to attend conventions . . . . Y N
12. I've more than average mechanical ingenuity . . . . Y N
13. I dislike people who borrow things . . . . Y N
14. I would like to be a mechanical engineer . . . . Y N
15. I like people of all nationalities in my community . . . . Y N
16. I'd like to work a 40-hour week . . . . Y N
17. I would enjoy making speeches . . . . Y N
18. I'd like to be head of a research department . . . . Y N
19. I like to keep meeting new people . . . . Y N
20. I enjoy bargaining when I'm buying something . . . . Y N
21. I'd like to develop some new scientific theories . . . . . Y N
22. I'd like a straight salary in my life work . . . . Y N
23. I prefer only a few really intimate friends . . . . Y N
24. I'm better than average at judging values . . . . Y N
25. I like to get other people's viewpoint . . . . Y N

KEY FOR SELF-EVALUATION IN SALES WORK

Your answers indicate interests or characteristics favorable to success in sales work. To find your total score, add up the number of your answers that agree with those below. If your score is 16 or above, your chances of success in the selling field are favorable. A score below 16 indicates that you probably would have better chances of success in some other field.

1. ___ N
2. ___ N
3. Y ___
4. ___ N
5. Y ___
6. ___ N
7. Y ___
8. ___ N
9. Y ___
10. ___ N
11. Y ___
12. ___ N
13. Y ___
14. ___ N
15. Y ___
16. ___ N
17. Y ___
18. ___ N
19. Y ___
20. Y ___
21. ___ N
22. ___ N
23. ___ N
24. Y ___
25. Y ___

UNIT: ORIENTATION TO PROGRAM IN AGRICULTURAL OCCUPATIONS - SALES AND SERVICE

Number of class periods ________________ Month(s) ____________________________

Major objective to be attained through the unit: To orient the students to the program, to their responsibilities, and to provide introductory training in agricultural occupations.

Learnings Needed to Reach the Objective

(At the outset of the program in agricultural occupations students need to be clear on what is involved and their responsibilities to themselves, their parents, and the school.)

1. To understand the importance of distribution (in agri-business) to our economy

    a. Production supplies purchased by farmers
    b. Production services purchased by farmers
    c. Things the farmer now buys that he did not buy 20 years ago
    d. Jobs in agri-business are growing while farm jobs are decreasing

2. To secure an understanding of the term nonfarm (off-farm) agricultural occupations

    a. What is agriculture?
    b. What is an occupation?
    c. What do we mean by nonfarm? -- off-farm?

3. To become familiar with the objectives of the course

    a. What is involved in different jobs in agri-business?
    b. Need for training in agricultural occupations
    c. How does one become proficient in an agricultural occupation?
    d. Major objectives of the units of instruction to be dealt with
    e. Overview of the course content

4. To understand the pattern of instruction: class work followed by supervised occupational experience

    a. The place of classroom work
    b. The place of work experience in the training program
    c. The place of supervision by:

        -- The teacher
        -- The employer

5. To develop a clear understanding of the students', the teacher's, and the employers' role in the training program

    a. The role of the student in the program

        -- Responsibility to the school

    - -- Responsibility to the employer
    - -- Responsibility to self
    - -- Responsibility to future students in the program

  b. The role of parents in the program
  c. The role of the teacher in the program
  d. The role of the employer (cooperator) in the training program
  e. Developing a PLACEMENT AGREEMENT (Memorandum of Understanding)

6. To develop enthusiasm for the program in agricultural occupations and at the same time an awareness of the hard work and the responsibilities involved

  a. How does this training program look to the student?
  b. How important is it to plan and do our work well?
  c. To what extent do you represent the school and the department of vocational agriculture?
  d. Who loses if you fail to carry out your responsibilities?

7. To understand that the students are building reputations as working men in the business organizations where they work

  a. How does one build a good credit rating?
  b. How does one build a reputation for work?
  c. Affect of your work in the agricultural business on boys who are to be trained later
  d. Recommendations for jobs later
  e. Development of personality and work habits

8. To understand the legal requirements of a job

  a. Working papers

    - -- Where to get them
    - -- What to do with them
    - -- What is required
    - -- Certificates of employment

  b. Labor laws

    - -- Child labor laws

      - -- State
      - -- Federal
      - -- Wage

  c. Federal Social Security Acts

    - -- FICA -- Federal Insurance Contributions Act
    - -- FUTA -- Federal Unemployment Tax Act
    - -- FIT -- Federal Income Tax

9. To apply for a job

  a. Know why you want a particular job

b. Secure information about the business
c. Prepare a personal data sheet
d. Methods of applying for a job

-- Letter of application
-- Personal interview

e. Practice interviews

10. To conduct a successful interview and to follow through

a. Attracting favorable attention
b. Check your appearance
c. What to do upon arrival
d. Using correct English
e. Filling out the application form
f. Let the interviewer take the lead and set the pace
g. What to do upon ending the interview
h. Follow-up the interview

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

This unit should be dealt with early in the year in which the course in agricultural occupations is taught. How well this unit is taught and the impression it makes upon students will determine to a large extent the success of the program. Students need to have made clear to them, through solving of appropriate problems, their responsibilities in the program. The success of the program on a longtime--continuing basis is largely dependent upon how well students carry out their responsibilities in the agricultural businesses where they get their supervised occupational experience. Students should be aware of and understand that the success of the program in years to come depends upon their success as individuals and the success of the total program during the year.

Students need to understand the importance of distribution of production supplies and services to the agricultural industry. The jobs in the businesses that sell to and render service to farmers are increasing and becoming more complex. The young people who enter these jobs need to be well trained for the jobs they are to hold.

The course of which this unit is a part, is designed to prepare boys for "job entry" in agricultural occupations so they will be successful employees from the start and can advance in the job. Students should realize that their actions in the centers the first few days will create impressions which will greatly affect their success or failure. The pattern of instruction in vocational education is fundamental in the program. Students will have class instruction followed by supervised practice related to the class instruction.

The responsibilities of all parties concerned must be made clear: the students', the teacher's, the parents', and the employer's. This unit should assist greatly in developing the fundamental understandings necessary for success.

Student Goals

Students should understand that they have responsibilities to their parents, the employers, the teacher, the school, the students to follow, and to themselves, to succeed in the training program. They should set goals to fulfill these responsibilities, plan their activities at school and their work experience so as to succeed, and perform each task to the very best of their abilities.

Providing the Class Instruction

The learnings in this unit may be secured by dealing with a series of problems similar to these:

1. How important is distribution (in agricultural businesses) to our economy?
2. What common terms do we need to have a clear understanding of?
3. What are the objectives of this course in agricultural occupations?
4. What pattern of instruction will we follow in the course?
5. In this training program, what is the role of:

    -- The teacher?
    -- The parents?
    -- The students?
    -- The cooperators?

6. How shall we approach our jobs, as we start to engage in supervised occupational experience, in an agricultural business?
7. How important is our individual performance in the agricultural businesses where we are to work?
8. What are the legal requirements for work in an agricultural business?
9. How apply for a job?
10. How conduct an interview and follow up?

Teaching Suggestions

The following teaching techniques and aids are suggested:

Have a local businessman meet with the class and explain the importance of and the procedure to follow in making application for a job. Provide time for students to ask questions.

Study personal data sheets on last year's students. Use transparencies to contrast the correct and incorrect preparation of personal data sheets.

Make a transparency of "Application for Occupational Experience" (personal data sheet) form. Have each class member complete a form using the projection on the screen as a guide. Emphasize neatness and completeness.

Make a transparency of "Sample Letter of Application" similar to the one on page 22. Have each class member write a letter of application. Emphasize the importance of neatness, correctness, and completeness.

Use "role playing." Have each student, in turn, serve as interviewee and one as interviewer. Have the class evaluate the interviewee and make constructive suggestions. It is good to record the interviews and play them back to the class.

After classroom discussion and interview "role playing," use review tests on pages 30 and 31 to insure students understand and are able to make application of learnings.

To be realistic, have boys wear appropriate dress and set up desk and chairs in a section of the classroom for practice work. When a boy becomes proficient, and only then, permit him to make arrangements for an interview and apply for occupational work experience.

Guidelines for working out PLACEMENT AGREEMENT are suggested on page 27.

A meeting of the parents at the school will help secure a good understanding of the program, their responsibilities, and the responsibilities of the teacher and employers. It is good to have one of the employers, a member of the advisory committee, and the principal present to answer questions.

Student Participation

Have each student prepare a personal data sheet. It should be complete, correct, and neat.

Have each student make arrangements for an interview with the manager of the agricultural-supply business where he expects to work.

After an interview with manager of the business, have each student evaluate his performance.

Have each student follow up his interview by writing the proper person thanking him (her) for the interview and providing any additional information that is needed.

Getting Decisions Made and Carried Out

The teacher should lead the students to make sound decisions to the problems dealt with in this unit. Sound decisions with clear understandings will do much to assure a successful year of placement for supervised occupational experience in the agricultural businesses. The lessons dealing with applying for a job, including interviews and follow up should do much to prepare boys for applying for jobs. Role playing, writing letters of application, preparing personal data sheets should do much to instill confidence in the boys.

References

Books

Fundamental of Selling; Seventh Edition, Wingate and Nolan, (Southwestern Publishing Company, Chicago -- 1959.)

Handbook of Agricultural Occupations; Hoover, (The Interstate, Danville, Illinois -- 1961.)

Farming Programs; Hammonds and Binkley, (The Interstate, Danville, Illinois -- 1961.)

Labor Laws in Kentucky; (1962) Commonwealth of Kentucky, Frankfort, Kentucky

Booklets, Bulletins, and Circulars

"How to Get that Part-Time Job;" Arco Publishing Company, Inc., 180 Lexington Avenue, New York 17, New York

"Curriculum Development;" Bulletin, OE 82000, U. S. Department of Health, Education, and Welfare, Washington, D. C.

"Teaching Occupational Information in Agricultural Education;" Pennsylvania State, University Park, Pennsylvania

"Careers in Agriculture;" Department of Agricultural Education, Ohio State University, Columbus, Ohio

"Agricultural Occupation Information;" Department of Agricultural Education, Ohio State University, Columbus, Ohio

"Making the Most of Your Job Interview;" New York Life Insurance Company, 51 Madison Avenue, New York 10010

"Can I Get the Job;" Public Relations Staff, General Motors, Detroit, Michigan

REFERENCES ACCORDING TO LEARNINGS

1. To understand the importance of distribution (in agri-business) to our economy	Fundamentals of Selling, pp. 52, 57-58, 61, 637 Farming Programs, pp. 295-308 "Handbook of Agricultural Occupations," pp. 93-133 "Careers in Agriculture," pp. 1-6
2. To secure an understanding of the term nonfarm (off-farm) agricultural occupations	Handbook of Agricultural Occupations, pp. 18-33 "Agricultural Occupations Information," pp. 2-5 Teacher explanation and discussion with the class

3. To become familiar with the objectives of the course	The teacher will need to be clear on the objectives for the course. He should list the units of instruction on the chalkboard and discuss them with the students.
4. To understand the pattern of instruction: class work followed by supervised occupational experience	Farming Programs, pp. 18-22 "Curriculum Development," pp. 13-17 The teacher will need to discuss with his students and make clear the pattern of instruction and why it is set up as it is -- relate pattern in earlier years of vocational agriculture.
5. To develop a clear understanding of the students', the parents', teacher's, and the employers' part in the training program	The teacher will need to develop a clear understanding on the part of the students, their responsibilities, and the responsibilities of others in the program. Farming Programs, p. 196 Guidelines for Developing Placement Agreement, page 27.
6. To develop enthusiasm for the training program in agricultural occupations and at the same time an awareness of the hard work and responsibilities involved	The teacher has a challenging job here of building enthusiasm on the part of students for their supervised occupational experience.
7. To understand that students are building reputations as working men in the business organizations where they work	Fundamentals of Selling, pp. 668 The teacher will need to guide the students to see and understand that they are building reputations as they engage in supervised occupational experience. This is important.
8. To understand the legal requirements of a job	Kentucky Labor Laws, pp. 30-37 The teacher should consult the local employment service to determine the minimum wage to be paid student employees.

9. To apply for a job	Fundamentals of Selling, pp. 651-66 "Can I Get the Job" "Making the Most of Your Job Interview"
10. To conduct a successful interview and follow through	Fundamentals of Selling, pp. 667-68 "Can I Get the Job" "Making the Most of Your Job Interview"

RELATED MATERIALS

SAMPLE LETTER OF APPLICATION

Agricultural Occupations

305 North Fayette Street
Lexington, Kentucky
January 23, 1964

Mr. George Stone, Manager
Farm Service Store
3454 North Earl Street
Georgetown, Kentucky

Dear Mr. Stone:

Kindly consider this my application for occupational experience as an employee with your company.

My personal qualifications are briefly: 18 years of age, single, senior in high school studying agricultural occupations as a part of my work in vocational agriculture. I am presently in the upper fifth of my class and have an over-all high school average of a "B."

I am sincerely interested in the products which your company sells and would deeply appreciate an interview with you at your earliest convenience to acquaint you with the training program I am enrolled in and my qualifications.

Yours truly,

John Smith

APPLICATION FOR OCCUPATIONAL EXPERIENCE

(Personal Data)

Name ______________________________ Social Sec. No. ____________

Present address ______________________ Home Phone No. ____________

Date of birth: Mo. __________ Day ______ Year ________ Age ________

Do you live with parents? ______________ Relatives? ______________

How many years have you lived on a farm? ____________________

How many years of vocational agriculture have you completed? __________

Who referred you for occupational experience? ________________

List hobbies or recreational activities you enjoy ________________

____

What sports do you enjoy? ______________________________

In what extra-curricular activities do you participate? ____________

____

(Education)

	Name of School	City	Dates From	To	Graduate?
Elementary					
High School					
Other					

List each machine you can operate ______________________________

____

Have you learned a trade? ______________ Kind ______________

How soon would you be available for work? ____________________

(Health)

Name of family physician ______________ Your Height ______ Weight ______

What illnesses or operations have you had in recent years? __________

Were you ever injured while working? ______ How many times? __________

Are you physically handicapped? ________ Describe ______________

Person to notify in case of emergency ________________________
Relationship ______________

Address ______________________________ Phone No. ____________

NAME ______________________________ DATE ______________

SOME HELPS REGARDING INTERVIEWS

The Interview

A successful interview usually begins long before the interview. After you know the store where you are to get your occupational experience, you are in a position to do a little research. Find out where the company is located, who the manager is, and what the company sells (including "brand name" products), and its policies and organization. Ask yourself how you can fit into the store best.

Before you leave for the interview, check your personal appearance. Dress smartly and neatly. Above all, be clean. Carry with you a portfolio of references and a personal data sheet.

When you enter the interview office, smile easily; act naturally. The interviewer is interested in the real you. He will usually be an experienced person and will move the interview along. If he gives you a chance, offer special information about your interests and desires and your interest in the store. Ask questions. Show interest!

Before the Interview

1. What kind of training do you really want?
2. Where can you go to find such training?
3. What qualifications are necessary to obtain such training?
4. How can you best get the kind of experience you need?
5. What do you know about the store where you desire to work?
6. Does the store hire persons without experience for that kind of job?
7. Name of person doing the employing or who is the personnel manager?
8. How can you obtain an interview?
9. Are you clear enough on the training you want?
10. What kind of clothes should you wear for the interview?
11. Prepare a grooming check list for yourself.
12. What references should you carry with you to the interview?
13. Why is it important to arrive on time for your interview?
14. Know exactly where you are going for the interview and the name of the person you are to talk to.

During the Interview

1. If you are introduced to the interviewer, what should you say?
2. Should you shake hands with the interviewer? If so, how?
3. Should you smile?
4. Should you sit down immediately?
5. How should you sit?
6. Where should you put materials that you have carried with you?
7. If the interviewer waits for you to speak, what should you say?
8. If the interviewer asks questions, how should you reply?
9. If the interviewer makes no offer of a training position, what should you do?
10. If the interviewer makes an offer of a training position, what questions should you ask?

After the Interview

Every interview should be followed up with a letter of appreciation, thanking the interviewer for his kind consideration and reaffirming your desire to have the training position for which you have applied. The follow-up letter may express your interest in the company, its products, or the kind of work involved. Remember that a prospective employer has more to decide than just "will this person fit in with our firm?" He must decide "will this person fit in better than the other candidates for this job?"

YOU MUST STAND OUT AMONG ALL THE REST. This fact alone should be enough to convince you that you must be "on your toes" and be selling yourself every minute of the time you have with a prospective employer. Also bear in mind that you are not only competing with other applicants, but you are also competing with certain standards of qualifications that every firm establishes as they see fit.

PERSONAL DATA SHEET

Sam Wilson
Route #4
Shelbyville, Kentucky

PERSONAL INFORMATION

Age: 18
Height: 5'10"
Weight: 165
Health: Excellent
Telephone: 277-5674

JOB OBJECTIVE

I wish to secure a position in the area of selling which, through experience and training, will lead to a future position in a field of agricultural business

(State the kind of position, program, or area you are interested in. Clearness of objective and clarity of expression are both important. State your interest fully but be as brief as possible.)

EDUCATION

High School: Shelby County High School
Major: Vocational Agriculture
Technical Skill: Typewriting speed, 50 wmp; office machines training
Leadership Activities: President, FFA; Treasurer, Senior Class; Secretary, Future Business Leaders of America

WORK EXPERIENCE

John Smith, Farmer, Route #6, Simpsonville, Kentucky
Pete Jones, Farmer, Route #1, Finchville, Kentucky
Anderson's Service Station, 1020 Main Street, Shelbyville, Kentucky
(Attendant during summer, 1965)

(Briefly list the jobs held during your high-school career giving employer's name, address, title of job, and length of service. Begin with your last job first.)

REFERENCES

Mr. Smith, listed above
Mr. Jones, listed above
Shelby County High School, Shelbyville, Kentucky

(Include if possible a business, an educational or personal reference. Get permission to use names. If references are not cited, the following statement may be used: "Suitable business and personal references upon request.")

GUIDELINES FOR WORKING OUT THE "PLACEMENT AGREEMENT"

NOTE: Prior to school starting in the fall the teacher should have arranged, to the extent possible, for the necessary training stations and have developed with the employers a good understanding of the training program.

Working With Students

- -- Teach the unit on "Orientation to Program in Agricultural Occupations -- Sales and Service"
- -- Give special emphasis to learnings 5, 6, and 7
  - (5) To develop a clear understanding of the students', the teacher's, and the employers' role in the training program
  - (6) To develop enthusiasm for the training program in agricultural occupations and at the same time, develop an awareness of the hard work and the responsibilities involved
  - (7) To understand that students are building reputations as working men in the business organization where they work
- -- Take class time and work through the student's part on the "placement agreement" (memorandum) stressing the importance of each point. Have each student check the things he agrees to.
- -- Have each student complete two copies, one for himself and one for his potential employer.

Working With Parents

- -- Have a meeting of parents at school. Explain the entire program stressing the importance of the student getting occupational experience in a place of business. Also, the importance of students working at the places of business at the time the employers desire them to work.
- -- Visit each parent at home and work through the agreement (memorandum) with them. Complete the parent section of the two copies.

Teacher's Part of the Agreement

- -- Teacher complete the section that applies to him

Working With the Employer

- -- Teacher make an appointment for each boy and himself to see the employer
- -- Explain the agreement (memorandum) to the employer. Show him what the student, the parents, and the teacher agree to do and what you would like him to do.
- -- Decide in general, the months, days of the week and hours of the day that the student will work and fill in the information in this section, both copies.
- -- Have name and address of each party typed on the form
- -- Leave one copy with the employer. Student staple other copy in his record book.

PLACEMENT AGREEMENT
(Memorandum of Understanding)

For The Supervised Occupational Experience of a Student of Vocational Agriculture

To provide a basis of understanding and to promote business relationships this memorandum is established on ____________________________, 19 ____.

This work will start on ______________________, 19 ____, and will end on or about ______________________, 19 ____, unless the arrangement becomes unsatisfactory to either party.

Person (employer) responsible for training ________________________________

The usual working hours will be as follows:

While attending school ________________________________

When not attending school ________________________________

Provisions for overtime: ________________________________

____

Provisions for time off: ________________________________

____

Liability Insurance coverage (type and amount) ________________________

____

Wages will be at the following rate(s): ____ Trial Period: ______________

Remainder of the Agreement Period: ______________________

And will be paid (when?): ________________________________

IT IS UNDERSTOOD THAT THE EMPLOYER WILL:

_____ Provide the student with opportunities to learn how to do well as many jobs as possible, with particular reference to those contained in the Planned Program.

_____ Coach the student in the ways which he has found desirable in doing his work and handling his management problems.

_____ Help the teacher make an honest appraisal of the student's performance.

_____ Avoid subjecting the student to unnecessary hazards.

_____ Notify the parent and the school immediately in case of accident or sickness and if any other serious problem arises.

_____ Assign the student new responsibilities when he can handle them.

_____ Cooperate with the teacher in arranging a conference with the student on supervisory visits.

_____ Provide other considerations: ________________________________

____

____

THE STUDENT AGREES TO ITEMS CHECKED BELOW:

_____ Do an honest day's work recognizing that the employer must profit from his labor in order to justify hiring him.

_____ Keep the employer's interest in mind and be punctual, dependable, and loyal.

_____ Follow instructions, avoid unsafe acts, and be alert to unsafe conditions.

_____ Be courteous and considerate of the employer, his family, and others.

_____ Keep such records of work experience and make such reports as the school may require.

_____ Develop plans for management decisions with the employer and teacher.

Other: ____

____

THE TEACHER, IN BEHALF OF THE SCHOOL, AGREES TO:

_____ Visit the student on the job at frequent intervals for the purpose of instruction and to insure that he gets the most education out of his experience.

_____ Show discretion at the time and circumstances of these visits, especially when the work is pressing.

Other: ____

____

THE PARENT AGREES TO:

_____ Assist in promoting the value of the student's experience by cooperating with the employer and the teacher of vocational agriculture.

_____ To satisfy himself in regard to the living and working conditions made available to the student.

Other: ____

____

ALL PARTIES AGREE TO:

_____ An initial trial period of _____ working days to allow the student to adjust and prove himself.

_____ Discuss the issues with the teacher before ending employment.

Other: ____

____

STUDENT ____________________

Address ____________ Tel. No. ________

Social Security No. ____________

EMPLOYER ____________________

Address ____________ Tel. No. _____

PARENT ____________________

Address ____________ Tel. No. ________

TEACHER ____________________

Address ____________ Tel. No. _____

School Tel. No. ____________

REVIEW TEST ON SEEKING EMPLOYMENT -- #1

Directions: Check your answer to each of the following questions.

1. When one seeks employment, is he engaging in a form of selling? Yes ____ No ____
2. Do a large percentage of those who apply for positions often lack facts about themselves? Yes ____ No ____
3. Are broad, general statements about one's qualifications desirable in making a positive approach? Yes ____ No ____
4. In making a self-appraisal of one's qualifications, he should list only his strong factors? Yes ____ No ____
5. Does the preparation of a personal resume aid one in organizing information about his qualifications? Yes ____ No ____
6. Should one have in mind a specific job objective when applying for a position? Yes ____ No ____
7. Should an applicant be ready to supply the prospective employer with information about the schools attended? Yes ____ No ____
8. Do employers usually have little interest in the grades a job applicant received while in school? Yes ____ No ____
9. Are most employers interested in the nonacademic school activities of an applicant? Yes ____ No ____
10. When applying for a job, is it usually desirable to omit telling about part-time jobs of short duration? Yes ____ No ____
11. Should a job applicant give a person's name as a reference without getting that person's permission? Yes ____ No ____
12. Is it desirable for the job applicant to get acquainted with some prospective employers while still in school? Yes ____ No ____
13. Are most companies interested in referrals of potential future employees by their present employees? Yes ____ No ____
14. Is a certain amount of persistence usually necessary in applying for a job? Yes ____ No ____
15. In general, is it desirable for a person to apply for a job with companies located near his home? Yes ____ No ____
16. Is the use of a "job-wanted" advertisement in a newspaper generally desirable for an inexperienced person? Yes ____ No ____
17. Do most schools and colleges provide some assistance in helping their graduates find jobs? Yes ____ No ____
18. Should a letter of application include a request for an interview? Yes ____ No ____
19. Does one have a better opportunity to get a job if he applies personally than if he depends on a letter of application? Yes ____ No ____
20. Is the use of correct English of importance when one is applying for a job? Yes ____ No ____
21. When applying for a job, should one avoid use of the "you attitude" that is used in selling merchandise? Yes ____ No ____
22. Are letters of recommendation carried by applicants and addressed "To Whom It May Concern" of great value? Yes ____ No ____
23. Is it usually desirable to enclose a stamped and addressed envelope with a letter of application? Yes ____ No ____
24. Most companies require job candidates to pass a physical examination before employing them? Yes ____ No ____
25. Should one secure a social security card before seeking employment? Yes ____ No ____

REVIEW TEST ON SEEKING EMPLOYMENT -- #2

Directions: In each of the following statements, select the word (or group of words) that best completes the statement. Write the letter corresponding to the word (or group of words) selected in the answer column.

Answer

1. For a job to be satisfactory for the average individual, it should be (A) interesting, (B) challenging, (C) both interesting and challenging ______

2. When the employer asks the job applicant "What can you do?", it indicates that the employer is interested in the applicant's (A) broad overall knowledge and abilities, (B) specific skills, (C) physical fitness ______

3. Of the following persons, the one most likely to be the best reference for you when applying for a job is a (A) neighbor for several years, (B) relative who is a well-known businessman, (C) friend of the family, (D) businessman for whom you have worked ______

4. If a company has an employment office, one seeking employment as a salesman should call on the person at the (A) employment office, (B) president's office, (C) office of the sales manager, (D) office of the general manager ______

5. When making a written application for a job, one should (A) include all pertinent information in a letter, (B) include all pertinent information in the form of a personal data sheet, (C) write a letter of application and also prepare a personal data sheet to enclose with the letter ______

6. The type of clothing generally recommended to be worn when applying for a position is (A) modern sports clothes, (B) party clothes with the different items complementing each other, (C) clothes suitable for business wear ______

7. In your approach to a prospective employer in his office, you should (A) offer to shake hands, (B) stand until he asks you to be seated, (C) noisily clear your throat to get him to recognize you, (D) greet him with a humorous remark ______

8. In the case of a personal interview, it is usually desirable that you (A) voluntarily tell the employer what salary you wish, (B) show great concern about your beginning salary, (C) let the employer tell you what the job will pay ______

9. When discussing a previous job which did not work out one should (A) blame the former employer, (B) suggest that at least some of the blame must have been your own, (C) refuse to discuss the situation ______

10. After the job interview is complete the interviewee should (A) attempt to flatter the interviewer, (B) thank the interviewer for his time and consideration, (C) be sure and tell one more story ______

UNIT: ORGANIZATION OF DISTRIBUTIVE BUSINESSES

Number of class periods ______________ Month(s) __________________________

Major objective to be attained through the unit: To develop an understanding on the part of students of the organization and operation of distributive businesses in the American economy. (To be the most effective salesman, or worker, an employee should know how the company or store, for which he works, is organized to do business. The opinion that a customer has of a business is often influenced by the knowledge and attitude that an employee has toward the business.)

Learnings Needed to Reach the Objective

(This unit is designed to develop an understanding of how the American free-enterprise system is organized to do business. The teacher should feel free to add other learnings which he feels are needed by his students.)

1. To understand the functions of business organizations in the United States

Business serves people

a. Business provides people with the basic necessities of life -- food, clothing, and shelter.
b. Business provides people with important services -- education, transportation, communication, health, recreation, etc.
c. The many goods and services made possible by business in the United States have resulted in its people enjoying one of the highest levels of living in the world.
d.

Business devotes much money and effort to develop better methods of doing things (providing goods and services).

a. Through research, business has developed the process of mass production and efficient distribution which have resulted in low costs for consumer goods and services.
b. Through research, new convenient goods and services are continually being made available.
c. Planning and cooperation among businesses and between business and government have resulted in efficiency. At the same time competition has spurred development, research, and production to keep the consumer price down.
d. Specialization has led to mechanization and efficiency.
e. Advances in processing, storing, and distribution have made basic agricultural products (especially food) produced in one area readily available to all consumers in the United States.
f.

Individual businesses as related to businesses as a whole

a. The primary motive of each individual business is profit -- to make money.

b. The result of all businesses as a whole, however, is making readily available a wide variety of servies and goods to all people.
c. The potential of business as a whole in producing goods and services is the key to our security in an unstable and threatening world.

An evaluative look at business

a. The remarkable abundance in the United States is the result of the steady growth and sound development of business, and the hard work of its people.
b. Efficient production in the most basic industries -- farming, mining, and fishing -- is the foundation upon which all other businesses and vocations are based. Providing essential goods and servies at reasonable prices for all people would be impossible without efficient, high-producing, basic industries.
c. Despite the weaknesses of sometimes not achieving a desirable balance between production and consumption, periods of depression, and problems of unemployment, the organization of American business is the key to our social and economic progress. It has produced the highest standard of living in the world, for such a large population.

2. To understand what it takes to make a business

The production of goods and services is a complex process. This process is dependent primarily upon these four basic factors:

a. National resources
b. Labor
c. Capital
d. Management

National resources include those physical and climatic features of the earth which cannot be created (or changed to any appreciable degree) by man.

a. Soil and climatic conditions (especially temperature and rainfall) are basic to all agricultural production (including forestry).
b. The earth's surface is the source of oil, coal, and metal ores.
c. Sea, coastline, and waterways are important (fish, electricity, transportation, for example).
d. Physical land area is important (roads, parks, buildings, etc.).
e. The productive efficiency of some natural resources can be increased by man (through irrigation, drainage, and fertilization of soil and mechanization, for example).

Labor is an essential factor in any business.

a. A business grows and profits as the productivity of its workers increases.
b. The productivity of labor may be measured in several ways. Some of these are number of workers; skill and rate of work; willingness, initiative, and ingenuity of workers; extent of mechaniza-

tion; and wages paid workers.
   c. Specialization of workers usually develops skill and efficiency.
   d.

Capital is needed for all businesses. Even the providing of services requires capital.

   a. Capital is primarily in three forms -- property (land, buildings, machines, tools, etc.), investment, and cash.
   b. Some capital resources are necessary for the smooth operation of many businesses and are thus of national concern (harbors, railroads, telegraph lines, highways, etc.).
   c.

Management is perhaps the biggest challenge in any business.

   a. Natural resources, labor, and capital are of little or no use to a business unless it is accompanied by good management.
   b. Science and progress have caused businesses to develop into large complex organizations. These require a high level of management.
   c. Perhaps the limiting factor in many businesses is management -- the making and carrying out of wise decisions.

3. To understand the operation of American businesses

American businesses are operated by those within the organization -- not from the outside.

   a. Individuals (and groups) who direct American businesses are different. They have different ideas. This helps give individual businesses a unique and different quality.
   b. Rivalry (called competition) is an essential feature of American business.
   c. The operation of business from within its own organization, competition among businesses, and private ownership are basic features of capitalism -- our economic system.

Broadly speaking, the functions of business can be classified into these four areas:

   a. Production of basic materials (farming, fishing, mining)
   b. Processing or manufacturing
   c. Distributing goods
   d. Providing services (finance, law, medicine, education, recreation, or entertainment, etc.)

Of our civilian working force, employment in these four areas is divided approximately as follows:

   a. Basic production, 8-10%
   b. Processing or manufacturing, 28-30%
   c. Distribution, 30-33%
   d. Services, 28-30%

American business is complex.

- a. The likes of people are different. The market must provide a wide variety of goods as to size, quality, color, style, etc.
- b. The preparation of such a variety of consumer goods from basic products is complicated.

4. To understand how distributive businesses are organized

Business in the U. S. is conducted by:

- a. Individual ownership
- b. Partnership
- c. Regular business corporation
- d. Cooperative business corporation

Services provided by the government which regulate and aid business organization (thus serving all citizens)

- a. Police and fire protection, armed forces (national security)
- b. Laws
- c. Regulations
- d. Postal service
- e. Education
- f. Through specific divisions of government -- U.S.D.A., Department of Commerce, Federal Trade Commission, U. S. Maritime Commission, Department of Labor, etc.

The legal aspect of government as it relates to business

- a. Issues regulations for businesses
- b. Sets standards in business; issues licenses
- c. Decides legality of differences between businesses, businesses and customers, businesses and government, etc.
- d. Grants the right for corporations to be organized. (Consider some basic characteristics of a corporation.)

5. To understand how a distributive business, owned by one person or by a partnership, operates

Ownership and management

- a. Business is owned by one person or by the partners, who share equally in ownership and management
- b. The owners have complete control of the business (so long as it is operated in accord with the legal provisions of government).
- c. All decisions are made by the owners (either one person or the persons in the partnership).
- d. Policy is determined by owner(s).

Financial responsibility

- a. The responsibility to supply the necessary capital rests with the owner(s).
- b. All risks are assumed by the owner(s).

c. The profits are enjoyed by the owner(s). Owner(s) alone receive the profit.
d. The liability of the business rests upon the owner(s). (As in item b above, the owner(s) alone suffer any loss which may occur.)

The partnership

Ownership by a single individual and the partnership are in most respects essentially the same in business. The basic difference being that in the case of the partnership all responsibilities, all liabilities, and all benefits of the business are shared equally by the partners. In case of business failure, however, all partners are personally liable to the extent of all their property (except legal exemptions) for the full amount of the partnership's debts.

6. To understand the operation of a regular business corporation

One unique feature of this business arrangement is that the corporation is treated by law as a "legal person." The members who own the corporation (by shares of stock) are not individually responsible to the law in the same way as are the single owners or partners in a business.

Another different feature of the business corporation is that it can continue to operate smoothly with the death or withdrawal of some of its owners.

In many respects the corporation is like other forms of business.

a. It provides goods and services.
b. It is operated for a profit.
c. It competes with other businesses.

Features of a business corporation

a. Ownership is by shares of stock.
b. The business is operated and policy is determined by an elected board of directors. This board employs a president, secretary, treasurer, and other officers to manage the business.
c. Capital for the business comes from the sale of stock and from returns from goods and services provided.
d. Voting by stockholders and dividends (returns) paid to the stockholders are in proportion to their ownership (the number of shares of stock that they own).
e. In a business failure the corporation is liable to the full extent of its assets. Each stockholder, however, cannot lose more than he has invested in stock.
f. The services and goods provided by a regular business corporation are for the most part not primarily for the stockholders, but are for the general public. The stockholder's primary motive in the regular business corporation is profit (investment).
g.

7. To understand how the cooperative business corporation does business

As with the regular business corporation, the cooperative business corporation has these features:

- a. The cooperative business corporation is a "legal person" in the administration and operation of laws of government.
- b. The cooperative business corporation is owned through shares of stock and the death or withdrawal of owners will not seriously disrupt the business.

Unique features of the cooperative business corporation

- a. The cooperatives are primarily to serve their members.
- b. Basic policy is determined at general meetings open to all members.
- c. The members elect a board of directors, who make the management decisions.
- d. Each member has one vote, regardless of the number of shares of stock that he owns.
- e. Excess net margin from the business is returned to members (owners) as patronage refunds. The size of the refund depends upon the amount of business the member has transacted through the cooperative.
- f.

Other characteristics of a cooperative business corporation

- a. Like the regular business cooperatives, the members (owners of shares of stock) are the sole owners of the business.
- b. Also like the regular business cooperative, capital for the business is supplied by the owners (members through the purchase of stock).
- c. Cooperatives pay all taxes as required by law. They do not pay taxes on profits because they are non-profit businesses. (Refunds are paid to members because they are non-profit businesses. Refunds are paid to members when a profit -- net margin -- is made. The refund is the responsibility of the individual member so far as tax is concerned.

8. To understand the larger goal of American businesses

Persons in all businesses desire a healthy, vital American economy which will provide the public with adequate capital to purchase or make available for themselves these goods and services as needed for a desirable level of living:

- a. Food
- b. Clothing
- c. Homes (shelter)
- d. Schools
- e. Hospitals (medical care)
- f. Churches
- g. Recreation
- h. Transportation
- i.

American businesses desire to eliminate unemployment. A great nation is possible with:

a. All people working together
b. Adequate resources (material, capital, facilities, transportation, management, etc.)
c. And, cooperation and effectiveness of operation by American businesses

A dynamic, growing, and healthy economy is not only necessary for a good life in the United States, but it is necessary for the welfare, stability, and peace of the world.

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

Many people fail to realize the real meaning of today's modern businesses. Many people look at a business as a place to shop, controlled by supply and demand. In order to fully understand the American Enterprise System, students should know how businesses are operated as well as how they are organized.

The teacher should familiarize himself with the operation of local businesses, particularly those used as training stations. He should be able to discuss with students and provide basic information concerning:

1. Basic principles of merchandise buying and selling
2. Activities, that go on behind the scenes in a business, of which the average customer is unaware
3. Receiving goods
4. How prices are established
5. Agri-business terms

A good employee in a business should know much about his company or business. He should know the names of the principal owners of the business. He should know how the business is organized and the duties and responsibilities of the employees with whom he has contact. He should know the policies relating to employment -- wages, promotions, working hours, expectations of employer, etc. When an employee in a business understands his company he is a more effective worker and will likely avoid major friction with other associates due to misunderstanding. Students should not during their training period, discuss wages, promotions, policy, or duties with other employees -- for they are trainees, not regular employees.

A few customers will ask sales people or other employees about the company or business. If the sales person is able to answer satisfactorily these questions of customers, both he and the business will benefit. If an employee shows a lack of knowledge, interest, and understanding of the company, the customer may go elsewhere to obtain goods and service. Knowledge of and interest in the business organization for which one works is often a factor in promotion.

Businessmen report one reason for business failure is a lack of understanding on the part of owners and employees concerning the true function of a business. Students should have a basic understanding of the function and operation of business and particularly of their training station. This knowledge will develop student confidence and help them to avoid mistakes. To be able to discuss products sold, explain why materials take two weeks for delivery, advantages of ordering early and to intelligently answer many questions asked by customers builds security in students.

Selling is a good way to get started in the business world. It is not unusual to find that over half of the executives in a business began as salesmen. Executives must know all the functions of the business. One good way to begin to learn a business is to sell its products. Therefore, distributive businesses offer a good opportunity for its employees to begin to explore the broad world of business.

Student Goals

The teacher should challenge the students to learn much about the organization and operation of distributive businesses. Each student should set goals such as these:

1. To understand the functions of business organizations in the United States
2. To understand what it takes to make a business
3. To understand the operation of American businesses
4. To understand how distributive businesses are organized
5. To understand how a distributive business, owned by one person or by a partnership, operates
6. To understand the operation of a regular business corporation
7. To understand how the cooperative business corporation does business
8. To understand the larger goals of American businesses

Providing the Class Instruction

Here are some suggested problem statements for securing the learnings in this unit:

1. How important are business organizations to our way of life in the United States?
2. What makes a business?
3. How does American business operate?
4. How are businesses organized to provide goods and services?
5. How are distributive businesses organized?
6. How do non-corporate distributive businesses operate?
7. How is the regular business corporation organized?
8. How do the cooperative business corporations provide goods and services for their members?
9. What is the goal of American business?

Teaching Suggestions

Student assignments may be useful in securing learning 4. The class could be divided into groups with each group to report on a different kind of business. A chart similar to one on page 47 may be helpful in securing understandings by students on how different kinds of businesses are organized.

The diagram on page 46 may be useful in illustrating the path a product takes from producer to consumer and how prices are established.

The list of definitions of business terms on pages 43-44 may be helpful in securing an understanding by students of business language.

Student Participation

Students may give class reports on the operation and organization of various kinds of businesses.

Students may make a chart, tracing the route of a product from producer to consumer.

Students should, before employment, spend 10-12 hours at a place of business observing how it operates.

Students should make a floor diagram of the business, showing location of various materials and supplies. This will be very useful to students in locating merchandise when they start to work.

Getting Decisions Made and Carried Out

The teacher should lead the students to make sound decisions to the problems dealt with in this unit. A clear understanding of the function, organization, and operation of the businesses where the students do their supervised practice will help them to succeed. Frequently the students will need to put into practice in the training centers the conclusions reached in the classroom or to relate what was discussed in class to what they actually observe in the operation of the business.

The teacher should observe the students and check with the employers when making supervisory visits to help insure that the students are developing an understanding of how the businesses operate.

References

Books

How We Organize to Do Business in America, (American Institute of Cooperation, 1616 H. Street, N. W., Washington, D. C.)

Circulars, Bulletins, and Pamphlets

"Your Off-The-Farm Business;" The Cooperative League of the USA, Chicago, Illinois -- 1961

"Brief Reports on Selected Cooperatives in Kentucky;" Binkley, Kentucky Cooperative Council, Louisville, Kentucky -- 1963. Secure copies of this publication from W. E. Howard, Secretary-Treasurer, Kentucky Cooperative Council, 120 South Hubbard Lane, Louisville, Kentucky. This publication sells for $1.00, however, a reasonable number will be supplied at no cost.

"Agriculture in the American Economy;" Kentucky Miscellaneous 205

"Efficiency in Both Selling and Buying Has a Direct Influence on Net Income From Farming;" Kentucky Miscellaneous 283

Movies

The Farmer's Business; (14 minutes -- available from J. M. Heizer, Director of Information, Farm Credit Banks, P. O. Box 239, Louisville 1, Kentucky)

Partners; (28 minutes -- available from Bureau of Audio-Visual Aids, University of Kentucky, Lexington, Kentucky). Carefully identify as film co-ops (there is one on Africa by same title).

Secure movies on specific cooperatives from local cooperative representatives. Example: 28-minute movie on credit entitled Credit Where Credit Is Due, may be secured from PCA

Flannelgraph

The American Private Enterprise System, sets forth the four main ways we organize to conduct business operations. Secure from American Institute of Cooperation, 1616 H. Street, N. W., Washington 6, D. C. at a cost of $10.00.

REFERENCES ACCORDING TO LEARNINGS

1. To understand the function of business organizations in the United States	How We Organize To Do Business In America, pp. 8-11
2. To understand what it takes to make a business	How We Organize To Do Business In America, pp. 16-17

3. To understand the operation of American businesses	How We Organize To Do Business In America, pp. 14-15
4. To understand how distributive businesses are organized	How We Organize To Do Business In America, pp. 6-7, 9, 12-13, 15
5. To understand how a distributive business, owned by one person or a partnership, operates	How We Organize To Do Business In America, pp. 20-23
6. To understand the operation of a regular business corporation	How We Organize To Do Business In America, pp. 24-25
7. To understand how the cooperative business does business	How We Organize To Do Business In America, pp. 26-29
8. To understand the larger goal of American businesses	How We Organize To Do Business In America, pp. 30-33

RELATED MATERIALS

DEFINITIONS - BUSINESS TERMS

1. Economics -- broadly speaking, is the science that studies how men earn their living.

2. Production, distribution, and consumption -- the three large divisions of business in the United States.

3. Distribution -- all the services performed between production and consumption.

4. Capitalism -- our economic system of business in the United States. Key features of capitalism are: (1) private ownership of land and property, (2) the allowing of businesses to be managed and operated by their owners for profit, and (3) the allowing of competition to regulate production, wages, and prices (except in case of an emergency).

5. Three primary ways a person can earn a living -- (1) from ownership of land or property (rent), (2) from production or service (manual, mental, or material), and (3) from investment in capital goods (interest).

6. Dividends -- returns on money invested in a business.

7. Government service -- a service used and paid for by everyone through taxes.

8. Incorporate -- to set up a corporation.

9. Interest -- money paid for the use of other money.

10. Investment -- money put into a business or other venture to buy land, buildings, and equipment.

11. Patronage refund -- returns to customers in proportion to their purchases, beyond the cost of doing business in a cooperative.

12. Profit -- money made from sale of goods or services to people, other than those who own the business.

13. Account -- a bookkeeping form that is used to sort and summarize the changes caused by transactions.

14. Account balance -- the difference between the two sides of an account.

15. Accrued expense -- expense incurred but not yet paid.

16. Accrued income -- income earned but not yet collected.

17. Asset -- anything of value that a person or a business owns.

18. Bill of lading -- a special form of receipt issued to the shipper for goods delivered to the transportation company.

19. Board of directors -- a group of persons elected by the stockholders from their own number to manage the business of a corporation.

20. Book value -- the estimated present value of a fixed asset as shown by the records; the difference between the cost price of the fixed asset and the accumulated estimated depreciation (the debit balance of the fixed asset account minus the credit balance of the reserve account); (of accounts receivable) the difference between the debit balance of Accounts Receivable and the credit balance of Reserve for Bad Debits; the value of a share of stock shown by the corporate books.

21. Budget -- an estimate of the income and expenditures for a future period of time, usually one year; a systematic estimate or plan for a future fiscal period of business.

22. Cash discount -- a deduction that the seller offers to allow on the amount of an invoice to encourage prompt payment by the purchaser.

23. Cash register -- a business machine that is used to provide an immediate

record of each cash transaction; a business machine that provides quickly an immediate record of sorting and keeping the money used in daily transactions.

24. C.O.D. -- "collect on delivery," meaning that the customer agrees to pay for merchandise at the time of delivery.

25. Commission -- a percentage of the selling price of a consignment that the consignee retains as the fee for his services.

26. Consignee -- one with whom a shipment of goods is placed to be sold for the owner (consignor).

27. Consignment -- a shipment of goods that is placed by the owner (consignor) with another (consignee) to be sold for the owner.

28. Cooperative -- a type of business enterprise that is owned by the customers it serves.

29. Copyright -- a special license issued by the Federal government that insures to authors and publishers the exclusive right to publish written works or trademarks for a period of twenty-eight years.

30. Corporation -- a form of business organization that may have many owners with each owner liable only for the amount of his investment in the business. It is an artificial person created by state or Federal law. As defined by the Supreme Court of the United States, a corporation is "an artificial being, invisible, intangible, and existing only in comtemplation of law."

31. Endorser -- one who signs his name to a note, a check, or other similar instrument for the purpose of transferring it to another person.

32. Fiscal period -- the period of time for which an analysis of the operations of the business is made.

33. Fixed assets -- same as "Plant and Equipment"; assets that will be used for more than one fiscal period in the operation of a business.

34. Fixed liabilities -- same as "Long-Term Liabilities"; debts that do not have to be paid for a number of years in the normal operation of the business. An example is Mortgage Payable.

35. Inventory sheet -- a form listing goods sold, the method of shipment, and the cost of the items.

36. Operating expenses -- decreases in the proprietorship of a business that are incurred in carrying on the normal operations of the business; any expenses incurred, other than the cost of goods sold, in conducting the normal operations of the business.

37. Overhead -- the expenses other than raw materials and direct labor that are incurred in the manufacturing or distribution process.

38. Partnership -- a form of business organization in which two or more persons combine their property or their skill, or both, in one venture and agree to share in the profits or the losses of the business.

AN EXAMPLE OF HOW PRICES ARE ESTABLISHED
(Seed as an Example)

Farmer

Farmer receives 10¢ per pound

Processor

Pays 10¢ per pound
1. Cleans
2. Classifies
3. Packages
4. Losses (damage, breakage, deterioration)

Sells for 14¢ per pound

Jobber

Pays 14¢ per pound
1. Transports
2. Stores
3. Repackages
4. Losses (damage, breakage, deterioration)

Sells for 16¢ per pound

Wholesaler

Pays 16¢ per pound
1. Transports
2. Stores
3. Repackages
4. Losses (damage, breakage, deterioration)

Sells for 18¢ per pound

Retailer

Pays 18¢ per pound
1. Labor
2. Losses (damage, breakage, deterioration, turnover)
3. Overhead

Sells for 20¢ per pound

Farmer

Pays 20¢ per pound for seed he received 10¢ per pound for

FACTS ABOUT THE FOUR KINDS OF BUSINESSES

Consideration	Individual Proprietorship	Partnership	Corporation	Cooperative
How set up	By owner	By agreement among partners	By investor	By people needing goods or services
Why set up	To sell to others	To sell to others	To sell to others	To serve members
Controlled by	Owner	Partners	Owners of majority stock--one vote for each share owned	Members--one vote each
Purpose of investment	To earn profits	To earn profits	To earn profits	To provide a service to members and others
Disposition of earning (other than income taxes)	All to owner	All to partners	Pay dividends to stockholders and retain reserves in the business	Pay interest or dividends on shares; return patronage refunds to patrons (what would be profit in a corporation) and retain reserves. Non-stock co-ops do not have shares
Taxed in the business	Nothing	Nothing	All earnings	All earnings*
Taxed on recipients	All earnings	All earnings	Dividends	Interest or dividends and patronage refunds where they constitute income
Double taxed	None	None	Dividends	Interest or dividends on shares
Taxed once	All earnings	All earnings	Reserves	Reserves and patronage refunds (to recipients)

* Farmer co-ops that qualify under Section 521 of the Internal Revenue Code pay no taxes on interest (dividends) paid on shares. However, their members are taxed on the interest or dividends.

UNIT: AGRICULTURAL MATHEMATICS

Number of class periods ____________ Month(s) ____________________________

Major objective to be attained through the unit: To develop the effective ability to make mathematical calculations needed in farming and in agricultural businesses (does not include machinery).

Learnings Needed to Reach the Objective

(Making accurate mathematical calculations is an ability needed for success in farming and other agricultural occupations. The teacher will want to modify the learnings listed here to meet the needs of his group.)

NOTE: This unit may be taught as a unit or selected parts may be integrated with other units: store skills, feeds, seeds, fertilizers, and agricultural chemicals.

1. To understand the importance of making accurate mathematical calculations

   Losses to crops and livestock due to inaccurate mathematical calculations

   a. Death of crops and livestock
   b. Injury to crops and livestock
   c. Reduction in growth or production

   Losses due to incorrect records

   a. Inaccurate management decisions
   b. Amount of income and profit
   c. Income tax purposes

2. To calculate interest on money (amount and rate)

   a. Figure simple interest
   b. Figure discount interest in advance
   c. Figure true interest on "easy-payment plan"

3. To determine amount and cost of seed

   a. Figure pounds of seed needed for a given number of acres
   b. Figure the cost per pound of seed when price per bushel is given
   c. Estimate plant population per acre at a given seeding rate

4. To determine amount and cost of building supplies

   a. Figure board feet for a given bill of lumber
   b. Figure cost of fencing a field
   c. Figure paint required for a building
   d. Determine the amount of cement (ready-mixed) needed for a given area
   e. Figure amount of roof needed for a given area

    f. Figure bill of materials for a given project

5. To calculate bill for a sales order for several different kinds of items at different prices, involving:

    a. Multiplication
    b. Division
    c. Addition
    d. Subtraction

6. To determine total receipts and costs when doing business through a cooperative association

    a. Figure total net receipt per bushel of grain when initial, final payments, and charges are given
    b. Figure receipts from selling through a cooperative when dividends are paid
    c. Figure net cost of merchandise when dividends are received

7. To determine percent markup, selling price and profit for given items

    a. Figure percent markup with a given wholesale price and a given selling price
    b. Figure retail price if a percent markup is given
    c. Figure profit (percent) when markup is given

8. To figure storage capacities of buildings

    a. Figure storage capacity of bins
    b. Figure capacity of silos
    c. Figure tons of loose hay in a barn

9. To measure land (acres and dimensions)

    a. Determine perimeter of fields
    b. Know square rods, yards, and feet in an acre
    c. Determine area of field with given dimensions
    d. Determine acres in a square field, rectangular and triangular field

10. To determine yield, value of production, and cost of production for crops and livestock

    a. Determine yield per acre in pounds, bushels, or tons for various crops
    b. Figure cost of producing a unit
    c. Figure value of product in quantity when value per unit is given
    d. Figure cost per unit when quantity and total value are given

11. To determine percent, amount, and cost of rations for livestock

    a. Figure the percent of digestible protein in a given ration
    b. Figure the percent of TDN in a given ration
    c. Figure the nutritive ratio of a given ration

    d. Figure the pounds of supplement to add to corn to give a certain percent feed
    e. Figure the amount of supplement (of a given percent) needed to balance specific home-grown feeds
    f. Figure the feed cost per pound of a given ration

12. To figure the kind (analysis-%), amount, and cost of fertilizers

    a. Determine percentage of plant nutrients in a fertilizer
    b. Figure pounds of plant nutrients per ton of a given fertilizer
    c. Figure cost per pound of plant nutrients in mixed and straight fertilizers
    d. Determine the kind (analysis) and amount of fertilizer needed on basis of a given soil test
    e. Figure the amount of a given fertilizer (straight goods) needed on basis of a given soil test

13. To calculate chemical dilutions and dosages

    a. Figure the percent of insecticide in a spray mixture
    b. Figure the pounds of wettable powder needed to mix a spray of a given percent
    c. Figure the gallons of emulsifiable concentrate needed to mix a spray containing a given percent of active ingredient
    d. To arrive at different quantities by following calculated charts
    e. To convert pounds and ounces of chemicals to teaspoons and tablespoons

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

Modern agriculture has a great deal of mathematics in it. Modern farmers and people in other agricultural occupations have the need for making mathematical calculations almost daily. It is important that these calculations be made accurately. To make an error may mean "over buying," which is expensive; applying too much fertilizer or insecticide damages crops or animals; and applying too small amount of seed, fertilizer, or chemicals results in poor production.

Most classes of senior students in agriculture are rather weak in mathematics. Many of them have not had adequate training in mathematics since grade school. The students going into farming and other agricultural occupations need to be skilled in the mathematics that pertain to agriculture.

Student Goals

The teacher may desire to give a pre-test in agricultural mathematics before he starts to deal with the unit. This could serve as a springboard for causing students to set goals in agricultural mathematics such as the following:

1. To calculate interest on money
2. To determine amount of seed needed and cost of seeding a given acreage
3. To determine amount and cost of building supplies
4. To calculate a sales ticket
5. To determine total receipts and costs when doing business through a cooperative association
6. To determine percent markup, selling price, and profit on items
7. To figure storage capacities
8. To measure land
9. To determine yield, value of product, and cost of production for crops and livestock
10. To determine percent, amount, and cost of rations for livestock
11. To figure the kind (analysis-%), amount, and cost of fertilizers
12. To calculate chemical dilutions and dosages

Providing the Class Instruction

The following problems are suggested as examples of the types of problems to be dealt with, in line with the objective of this unit. The teacher will need to formulate other problems in order to secure the many numerous and various learnings in the unit.

1. How important is it to make accurate mathematical calculations in agricultural business?
2. If Mr. Williams borrowed $1,800 on a discounted loan at 6 percent, how much money will he actually have the use of?
3. How much interest will Mr. Williams have to pay on an $1,800 loan for 6 months where the interest charged is 6 percent?
4. How many bushels of Korean lespedeza does a farmer need to sow 37 acres if he is to sow 12 pounds per acre?
5. What will be the farmer's total cost for the lespedeza seed, if the seed sells for $7.00 per bushel?
6. How many board feet are in the following bill of materials?

Bill #1

8 pcs. 2" x 4" x 8'
4 pcs. 1" x 6" x 12'
6 pcs. 1" x 12" x 10'

Bill #2

9 pcs. 2" x 8" x 12'
18 pcs. 1" x 8" x 10'
20 pcs. 2" x 4" x 8'

7. How many yards of concrete will be required to pave an area 60 feet long x 40 feet wide x 6 inches thick?
8. What will the concrete cost for the job if ready-mixed concrete sells for $12.50 per yard?
9. How much cement, sand, and gravel using a 1:2:4 mix are needed for a sidewalk 4 inches thick, 3 feet wide, and 20 feet long?

________________ cu. ft. cement

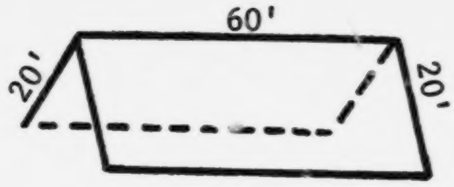
______________________ cu. ft. sand
______________________ cu. ft. gravel

10. You are ready to order a batch of ready-mixed concrete from the concrete mixing company for a foundation of the following dimensions: The building is 80' x 36', wall thickness is 12", and depth of foundation is 4 feet. (a) How many cubic yards would you order? (cu. yd. = 27 cu. ft.) (b) At a cost of $14.00 per cubic yard what would the concrete cost?

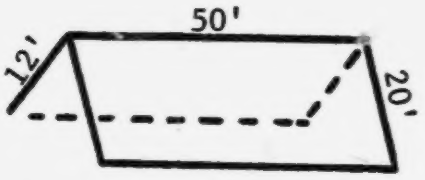
(a) ______________
(b) ______________

11. At $15.00 per yard of concrete, what would be the cost of pouring a cattle yard 4 inches thick x 100 feet long by 60 feet wide?
______________________ cost

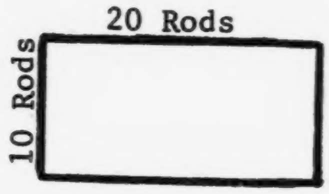
12. How many square feet of roofing are required for this roof?



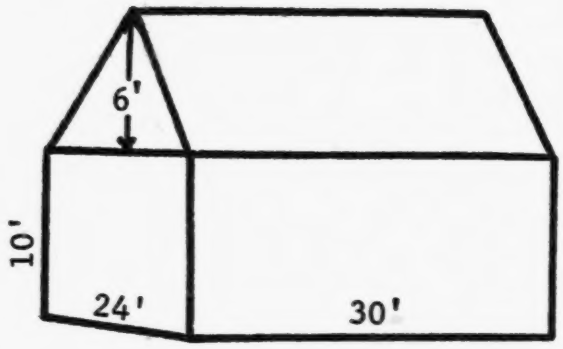
13. How many square feet of roofing are required for this roof?



14. How much will the wire and posts cost to fence this field, if woven wire fence is $ _______ per rod, steel posts $ ______ each (using a steel post to each rod) and using four corner-post rigs at $ ______ each?

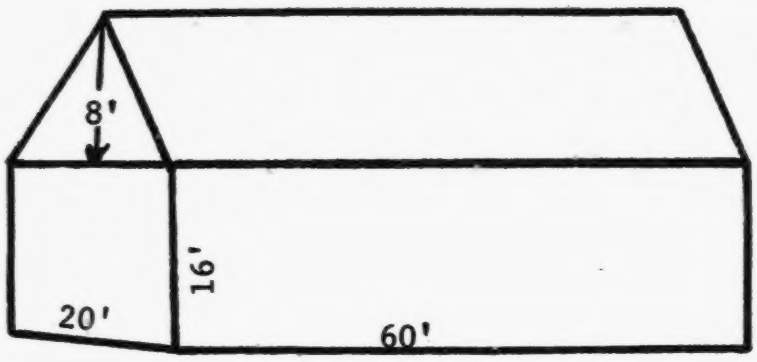


15. How many gallons of paint are needed for this shed, giving it two coats? (A gallon of the paint to be used will cover 300 square feet. Figure in whole gallons.)



How much will the paint cost for the shed if it sells for $6.50 per gallon? (Figure in whole gallons)

16. How much will the creosote paint cost for this barn, giving it two coats if a gallon covers 200 square feet and the creosote sells for $3.00 per gallon?



17. What will be the total cost of the following bill of materials?

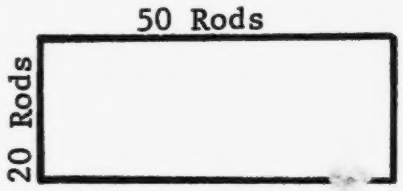
12 rods of fence @ _______ per rod
2 pcs. -- 2" x 10" x 12' @ _______ per board foot
16 pcs. -- 1" x 4" x 10' @ _______ per board foot
10# of 8 p nails @ _______ per pound

18. What will be the total cost of the following bill of materials, less 10 percent for cash and charging 3 percent sales tax?

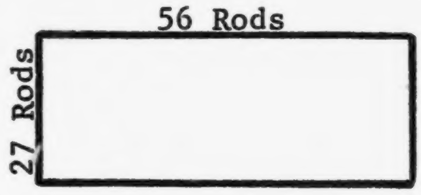
7 bushels of bluegrass seed selling for $ _______ per pound
20 pounds of ladino clover @ $ _______ per pound
6½ tons of 3-12-12 fertilizer selling for $ _______ per ton

19. Mr. Jones disposed of 610 bushels of soybeans through a local cooperative association at $2.80 per bushel. Transportation charges amounted to $36.75 and the association charged 3 cents per bushel for storage fees. What was Mr. Jones' net receipt for his soybeans?

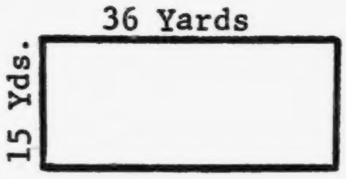
20. Mr. Wallace sold 475 bushels of soybeans through a cooperative. He received an initial payment of $1.75 per bushel and a final payment of 97 cents per bushel. What was his gross receipt for his beans?
21. A cooperative marketing organization paid a cash dividend of 5½ percent to its members on the produce marketed during the year. Mr. Williams received $3,785 as the total sale price of his produce sold through the association. What was the amount of his dividend?
22. What is the selling price of a $6.25 item with markup 32 percent?
23. What is the percent markup of a $6.00 item that sells for $7.80?
24. What is the percent profit on an item that costs $3.85 and sells for $5.10?
25. How many bushels of corn will a crib 8' x 10' x 20' hold, if a bushel of corn takes up 3½ cubic feet?
26. How many cubic feet are in Mr. Jones' silo which is 16 feet in diameter and 42 feet high?
27. How many tons of silage will it hold if silage weighs _______ pounds per cubic foot?
28. How many rods in the perimeter of this field?



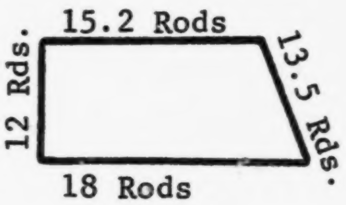
29. How many acres are in this field? (160 square rods equal an acre)



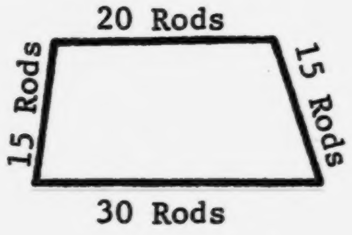
30. How many square yards are in this field?



31. How many square feet are in the above field?
32. How many acres are in this field? (160 square rods = 1 acre)



33. How many acres in this field? (160 square rods = 1 acre)



34. John had 7 acres of corn, it sold for $1.15 per bushel, his receipts were $913.00. What was his yield per acre?

35. Pete produced 2,734 pounds of tobacco per acre, the total cost of production was $782.93. What did it cost to produce a pound of tobacco?

36. What were the gross receipts on 2,984 pounds of tobacco selling for 67 cents per pound?

37. How many pounds of digestible protein are in this ration?

	D. P. Percent
60# corn	6.6
120# oats	8.5
20# wheat bran	13.6

38. How many pounds of T.D.N. are in this ration?

		T.D.N. Percent
_____ pounds of	____________________	_______
_____ pounds of	____________________	_______
_____ pounds of	____________________	_______

39. What is the nutritive ratio of this ration?

		D. P. Percent	T.D.N. Percent
_____ pounds of	____________________	_______	_______
_____ pounds of	____________________	_______	_______
_____ pounds of	____________________	_______	_______
_____ pounds of	____________________	_______	_______
_____ pounds of	____________________	_______	_______

40. How many pounds of 44% of SBOM are needed to mix with 6.6% corn and cobs to make a 16 percent ration?

41. How many pounds of 44 percent protein would you add to the following home-grown ration to make one ton of a 16 percent ration?

8 parts corn and cobs	6.6% D.P.
2 parts alfalfa hay	12.0% D.P.

42. If muriate of potash (50% K_2O) is selling for $58.00 per ton, what is the cost per pound of K_2O?

43. If superphosphate (_____% P_2O_5) is selling for $ _____ per 100 pounds, what is the cost per pound of P_2O_5?
44. If ammonium nitrate (_____% N) is selling for $ _____ per 100 pounds, what is the cost per pound of N?
45. Which is the cheaper buy per pound of nutrients purchased?

3-12-12 @ $36.50 per ton
or
6-24-24 @ $67.50 per ton
(Explain your answer)

46. Mr. Jones' soil test shows he needs to add 80 pounds of N, 120 pounds of P_2O_5 and 150 pounds of K_2O per acre to his tobacco land. What kind and amount of fertilizer would you recommend?
47. A certain grade of fertilizer costs $47.50 per ton. If 800 pounds of this fertilizer are used on one acre, what will be the cost of fertilizing a field 160 rods by 90 rods? (160 square rods = 1 acre)
48. When 25 pounds of a complete fertilizer such as 10-10-10, 6-8-6, or 12-12-12 are recommended for 1,000 square feet of lawn, how many pounds of fertilizer are needed for an area 95 feet x 120 feet?
49. When 3 pounds of fertilizer are recommended for 100 square feet of plant bed, how many pounds of fertilizer are needed for 600 feet of bed 12 feet wide?
50. How many pounds of 25% Co-Ral (wettable powder) are needed to make 25 gallons of spray containing 0.12½% Co-Ral?
51. How many pounds of 5% rotenone (wettable powder) are needed to make 50 gallons of spray containing 0.05% rotenone?
52. One pound of 5% rotenone (wettable powder) is mixed with 10 gallons of water. What percent rotenone is in the spray?
53. Two pounds of 25% Co-Ral (wettable powder) is mixed with 25 gallons of water. What percent Co-Ral is in the spray?
54. How much 20% pyrethrin (emulsifiable concentrate) is needed to make 10 gallons of spray containing 0.15% pyrethrin.

Teaching Suggestions

This unit may be taught as a complete unit in the course of study or it may be integrated with the appropriate units as the need develops for learnings in certain areas of mathematics. Most likely, it will be necessary to deal with some learnings in a unit and other learnings on an integrated basis. Probably the teaching will be most effective when the instruction closely relates to a realistic situation. When teaching filling out sales tickets, using scales, pricing, merchandising, figuring discounts, determining markup, making change, and so on, students should be very receptive to the mathematics involved. When students are faced with problems (and need a solution), they have an excellent attitude toward mathematics. By teaching mathematics in a realistic situation it becomes part of a solution to a real problem rather than dry, boring, and isolated.

A pre-test in agricultural mathematics should be given before starting to deal with the unit. The results will point out the areas where students are weak, thus allowing an opportunity to formulate realistic situations for practice. Considerable class time should be spent on areas where students have the greatest need and a quick review should be provided in the areas where the students are proficient.

The managers of the agricultural businesses where students do their supervised practice should be consulted to insure that the learnings in mathematics are those the students will need and use in the business.

Mathematical problems should be worked and explained on the chalkboard by the teacher, followed by similar problems formulated for student solution. Students' solutions should be checked out and their procedures checked when the solutions are incorrect, so that students may understand wherein they made errors.

Have students make mathematical calculations similar to those on page 64. Setting a time limit to complete the calculations should help increase the speed in making such calculations.

Student Participation

Students should practice working mathematical problems on exercise sheets, on the chalkboard, and in their demonstrations and other class activities where the solutions to mathematical problems are needed. The teacher should develop a "check out" procedure to be sure each student is learning to make the mathematical calculations correctly.

Getting Decisions Made and Carried Out

Most of the learnings can be practiced in the classroom. Students should be asked to make verbal application of the conclusions arrived at in class -- followed by practice at the training stations. The teacher should work with the employers to get the learnings studied in class carried out in supervised practice.

References

Determining Materials Needed

Concrete

A concrete mixture such as 1:2:4 means 1 part cement, 2 parts sand, and 4 parts gravel by volume. There are 7 parts in all. If 7 cubic feet of materials are used in a mixture, after the mixing is complete, there are less than 7 cubic feet because the fine particles of sand and cement fill in the empty spaces between the coarser gravel particles. Also cement fills spaces between sand particles.

On the average it takes about 43 cubic feet of unmixed cement, sand, and gravel to make one cubic yard (27 cu. ft.) of concrete. The ratio of 27 and 43 is the same as 1 to 1.6 ($43 \div 27 = 1.6$). In other words for each 1 cubic foot of concrete you must have 1.6 cubic feet of the unmixed ingredients of sand, cement, and gravel.

If you were to build a wall 1 foot thick, 10 feet long, and 5 feet high, the volume is 50 cubic feet. (1 x 10 x 5 = 50 cu. ft.) This 50 cubic foot volume of concrete would require 80 cubic feet of the unmixed ingredients. Multiply 50 by 1.6 gives 80 cubic feet. If you use a 1:2:4 mix, you would need the following amounts of cement, sand, and gravel:

1/7 x 80 = 11.4 cubic ft. cement
2 x 11.4 = 22.8 cubic ft. sand
4 x 11.4 = 45.6 cubic ft. gravel

Lumber

A board foot of lumber is 1 square foot and 1 inch thick. All the following pieces of lumber contain 1 board foot: (a) 2" x 6" x 1' long (b) 1" x 6" x 24" (c) 2" x 4" x 18" (d) 1" x 4" x 8' long

The formula for figuring board feet is:

$$\text{Board feet} = \frac{\text{No. of boards} \times \text{thickness in inches} \times \text{width in inches} \times \text{length in feet}}{12}$$

Example:

3 boards 2" x 4" x 10' has $\frac{3 \times 2 \times 4 \times 10}{12} = \frac{240}{12} = 20$ board feet

Determining Lengths and Perimeters, Measuring Surfaces and Measuring Volumes

Measures of Length

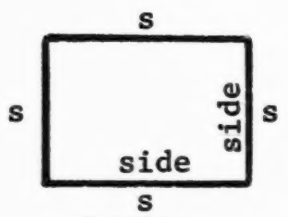
The units of length that are commonly used in the United States are the inch, foot, yard, and mile.

Measures of Length Table

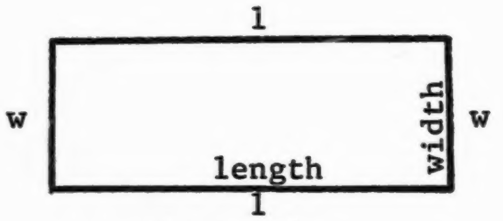
12 inches = 1 foot (ft.)
3 feet = 1 yard (yd.)
5½ yards = 16½ feet = 1 rod (rd.)
320 rods = 1,760 yards = 5,280 ft. = 1 mile (mi.)

Perimeters

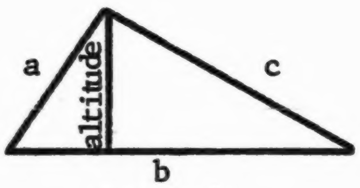
The sum of the lengths of the sides of a geometric figure is called the perimeter.



Square



Rectangle



Triangle

1. The square. Since all the sides of a square are equal, the perimeter P can be found by multiplying the length of one of the sides by 4; e.g., if s is 160 ft. the perimeter is 640 ft.

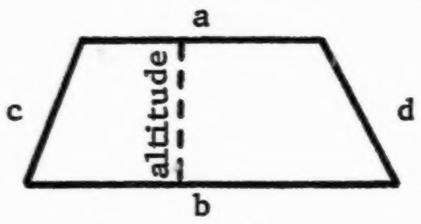
$$P = 4s$$

2. The rectangle. In a rectangle, the opposite sides are equal in length. The perimeter can be obtained by adding twice the length to twice width; e.g., if 1 is 100 ft. and w is 50 ft., the perimeter is 200 ft. + 100 ft. = 300 ft.

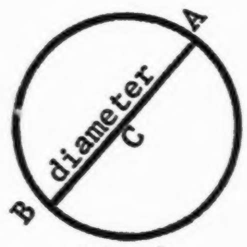
$$P = 21 + 2\,w$$

3. The triangle. To find the perimeter of a triangle we add the lengths of three sides; e.g., if the sides are 100 ft., 90 ft., and 80 ft., the perimeter is 270 ft.

$$P = a + b + c$$



Trapezoid



Circle

4. The trapezoid. To find the perimeter of a trapezoid we add the lengths of the four sides; e.g., if one of the parallel sides is 60 ft., the other 80 ft., and the other two sides are 30 ft. and 45 ft., the perimeter is 215 ft.

$$P = a + b + c + d$$

5. The circle. To find the perimeter, i.e., the circumference, C, of a circle we must first know the length of the radius, that is, a straight line starting from the center and ending at the circle (line CB or CA in the diagram). Twice the length of the radius equals the length of the diameter (line AB). To find the circumference of a circle, we multiply the length of the diameter by 3 1/7 or, to be more nearly accurate, by 3.1416. A Greek letter (pronounced "Pie") represents the number of times the diameter is contained in the circumference. The value of π cannot be given exactly, but it is approximately 3 1/7 or 3.1416.

$$C = \pi d$$

Measures of Surface

The units commonly used in business for measuring surfaces are the square inch, the square foot, the square yard, and the square rod. Often land is measured by the acre.

A square inch is a surface which is a square measuring one inch on each side, or an equivalent area. Similarly, a square foot is a square measuring 12 inches or 1 foot on each side.

MEASURES OF SURFACE TABLE

144 square inches (sq. in.) = 1 square foot (sq. ft.)
9 square feet = 1 square yard (sq. yd.)
30¼ square yards = 1 square rod (sq. rd.)
160 square rods = 4,840 square yards = 1 acre (A.)
640 acres = 1 square mile (sq. mi.)

Care should be taken to distinguish between expressions such as "3 square inches" and "3 inches square."

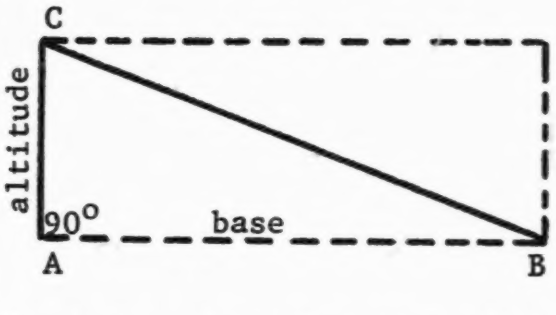
Areas

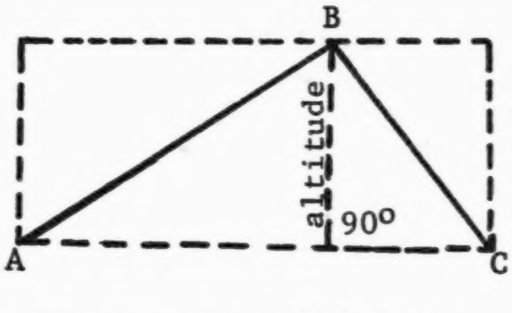
To find the area of any surface, we must find the number of square units contained in that surface.

1. The square and rectangle. The area can be obtained by multiplying the unit of measurement by the product of the length and the width; e.g., the area of a rectangular plot 50 ft. by 100 ft. is 50 x 100 x 1 sq. ft. = 5,000 sq. ft.

$$A = l \times w$$

2. The triangle. The altitude of a triangle is a line drawn from a vertex to the opposite side (the base) so as to make a right angle (90°) with the base. From the figures below it is seen that the area of a triangle is equal to half the area of a rectangle whose base and altitude are the same as those of the triangle; e.g., if the base (b) is 100 ft. and the altitude (h) is 50 ft. the area is 1 sq. ft. = ½ x 50 x 100 = 2,400 sq. ft.

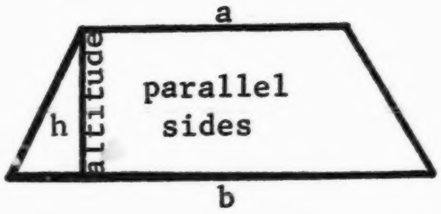




3. The trapezoid. The area of a trapezoid is found by multiplying one half the sum of the two parallel sides by the altitude; e.g., if the two parallel sides by the altitude; e.g., if the two parallel sides

are 90 ft. and 100 ft. and the altitude is 50 ft., the area is 1 sq. ft. = $\frac{190}{2} \times 50 = 4,750$ sq. ft.

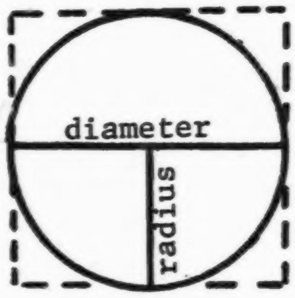
$$A = \frac{a + b}{2} \times h$$



4. The circle. The area of a circle is 3.1416 times the square of the radius. For example, if the radius is 49 ft., the area is 1 sq. ft. 3 1/7 (or 3.1416) x 49 x 49, or 7,546 sq. ft., approximately.

$$A = \pi r^2 \quad \text{or} \quad A = \frac{\pi d^2}{4}$$

Note: The area of a circle is roughly 3/4 of the area of the square which bounds it; if the radius is 50 ft. the diameter of the circle or the base of the square is 100 ft. The area of the square is therefore 10,000 sq. ft., so that the area of the circle is about 3/4 of the square, or 7,500 sq. ft., approximately. From the formula, the area of the circle is $\frac{22}{7} \times 2,500$, or 7,857 1/7 sq. ft.



Measures of Volume

The units commonly used for measuring the volume of a solid are the cubic inch, the cubic foot, and the cubic yard.

A cubic inch is the space enclosed by a cube 1 inch long, 1 inch wide, and 1 inch high.

MEASURES OF VOLUME TABLE

1,728 cubic inches (cu. in.) = 1 cubic foot (cu. ft.)
27 cubic feet = 1 cubic yard (cu. yd.)
231 cu. in. = 1 gallon (gal.)
1 cu. ft. = approximately 7½ gal.
1 bushel = 1¼ cu. ft. of space

Volumes

To find the volume of any solid, we must find the number of cubic units contained in that solid.

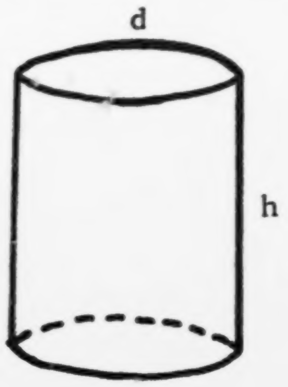
1. The rectangular prism. This is a rectangular solid having six faces, each of which is a square or a rectangle. To find the volume of a rectangular prism, multiply the unit of volume by the length, by

the width, and by the thickness or height.

$$V = l \times w \times h$$

2. The cylinder. A cylindrical solid is a solid the sides of which are uniformly curved and the ends of which are equal circles parallel to each other, as, for example, a silo. The circular ends are called the bases of the cylinder, and the uniformly curved surface is called the lateral surface of the cylinder. A cylinder may be regarded as consisting of countless thin circular disks piled one upon another to a given height. Hence the volume of a cylinder equals the area of its base (expressed in square units) multiplied by its height (expressed units).

$$V = \pi r^2 h \quad \text{or} \quad V = \frac{\pi d^2 h}{4}$$



A silo is 50 feet high and 16 feet in diameter (inside measurements) what is its volume?

Volume $= \pi r^2 h = 3.1416 \times 8 \times 8 \times 50 = 10{,}053$ square feet

Calculating Insecticides Dilutions and Dosages

1. To figure the percentage of insecticide in a spray mixture:

$$\frac{\text{pounds of insecticide used X \% active ingredient}}{\text{gallons of spray mixture X 8}} = \text{\% insecticide in mixture}$$

Example: One pound of 5% rotenone wettable powder was mixed with 10 gallons of water. What percent rotenone was in the spray?

$$\frac{1 \times 5}{10 \times 8} = \frac{5}{30} = .063\%$$

2. To figure the pounds of wettable powder needed to mix a spray containing a given percentage of active ingredient:

$$\frac{\text{gallons of spray wanted X \% active ingredient wanted X 8}}{\text{\% active ingredient in insecticide used}} = \text{pounds insecticide needed}$$

Example: How many pounds of 5% rotenone wettable powder are needed to make 100 gallons of spray containing 0.45% rotenone?

$$\frac{100 \times 0.045 \times 8}{5} = 36 = 7.2 \text{ pounds}$$

SIMPLE CALCULATIONS DEALING WITH MEASUREMENTS

Time: ____ minutes. Put your answer in the blank provided. Use the information provided on the right.

1. 768 inches = ____________________ feet   12 in. = 1 ft.
2. 102 feet = ____________________ yards   3 ft. = 1 yd.
3. 684 inches = ____________________ yards   36 in. = 1 yd.
4. 682 yards = ____________________ rods   5 1/2 yds. = 1 rd.
5. 792 feet = ____________________ rods   16 1/2 ft. = 1 rd.
6. 7,920 feet = ____________________ miles   5,280 ft. = 1 mi.
7. 5,720 yards = ____________________ miles   1,760 yds. = 1 mi.
8. 4,160 rods = ____________________ miles   320 rds. = 1 mi.
9. 864 sq. in. = ____________________ sq. feet   144 sq. in. = 1 sq. ft.
10. 801 sq. feet = ____________________ sq. yards   9 sq. ft. = 1 sq. yd.
11. 1,694 sq. yds. = ________________ sq. rods   30 1/4 sq. yds. = 1 sq. rd.
12. 1,020 sq. rods = ________________ acres   160 sq. rods = 1 ac.
13. 5,760 acres = ____________________ sq. miles   640 acres = 1 sq. mi.
14. 15,552 cu. inches = ____________ cu. feet   1,728 cu. in. = 1 cu. ft.
15. 351 cu. feet = ____________________ cu. yards   27 cu. ft. = 1 cu. yd.
16. 1,042 cu. feet = ________________ cords   128 cu. ft. = 1 cd.
17. 2,079 cu. in. = ________________ gallons   231 cu. in. = 1 gal.
18. 483 pints = ____________________ quarts   2 pts. = 1 qt.
19. 528 quarts = ____________________ gallons   4 qts. = 1 gal.
20. 104 quarts = ____________________ pecks   8 qts. = 1 pk.
21. 843 bushels = ____________________ pecks   4 pks. = 1 bu.
22. 216 articles = ____________________ dozens   12 art. = 1 doz.
23. 468 dozens = ____________________ gross   12 doz. = 1 gr.
24. 1,152 articles = ________________ gross   144 art. = 1 gr.
25. 1,248 ounces = ____________________ pounds   16 oz. = 1 lb.
26. 9,000 pounds = ____________________ tons   2,000 lbs. = 1 ton

UNIT: HUMAN RELATIONS AND PERSONALITY TRAITS

Number of class periods ______________ Month(s) __________________________

Major objective to be attained through the unit: To develop human relations and personality traits for success in agricultural occupations.

Learnings Needed to Reach the Objective

(Omit learnings which your students already possess. Add learnings that may be needed by your students.)

1. To understand basic human motives as they affect employer-employee relations
    a. Treat people as individuals
    b. Recognize that human behavior is unpredictable
    c. Don't pass the buck
    d. Be loyal to others
    e. Seek raises and promotions on merit
    f. Help build department and store morale

2. To understand that the student employee has an important human relations role in the business where he works
    a. How to do your job carefully
    b. How to help others when needed
    c. How to keep busy doing constructive work
    d. How to present your ideas
    e. How to make good instead of making excuses
    f. How to know yourself

        -- Test yourself
        -- Listen to your voice (use a tape recorder)

    g. How to gain self-confidence

        -- Knowledge of what you are to do
        -- Knowledge of products

    h. How to instill in yourself a desire for success

3. To understand the problems of adjusting to the job
    a. Learn the line of authority
    b. How to develop a "stick-to-it" attitude
    c. How to be resourceful
    d. How to be loyal to your store
    e. How to advance on the job

        -- Do more than is expected
        -- Approach your job with enthusiasm
        -- Be friendly
        -- Accept and carry out responsibilities

    - Do not be afraid to ask questions
    - Show you are willing to learn
    - Plan work ahead of time
    - Look sharp
    - Compliment fellow workers
    - Do not be "too eager"
    - Learn the names of fellow workers
    - Do not join cliques
    - Learn about your fellow workers
    - Learn the duties of your fellow workers
    - Develop good personality traits

  f. Employer-employee problems

    - How to recognize a problem
    - How to gather facts about a problem
    - How to find the best solution to the problem
    - How to carry out your solution

4. To understand the importance of a pleasing personality

  a. What is a pleasing (winning) personality?
  b. Physical appearance determines first impressions (self-analysis of physical characteristics, see EV-2, page 74)
  c. Good posture commands respect
  d. Self-control promotes poise
  e. How to improve your grooming
  f. Desirable mental characteristics
  g. How to improve your voice and speech
  h. Develop your personality

    - Personality is largely acquired
    - Needs:
      - Realize the need for improvement
      - Have a strong desire to improve
      - Make a survey of your personality, see EV-3, page 75 and EV-4, page 76
      - Develop a systematic plan for improvement

5. To develop desirable work habits, see EV-5, page 80

  a. Do school work as required
  b. Do chores and household duties on time
  c. Take part in extra projects when possible
  d. Work instead of loafing

6. To understand the importance, in any working situation, of getting along with the people one comes in contact with

  a. Most people share in common the following rights and desires:

    - The right to work at a job of their choice
    - To get ahead
    - To be accepted
    - To feel important and to do important work

- To make a contribution
- To have their opinions and ideas heard
- To be praised for work well done
- To think and act as individuals

b. Desirable traits of retail workers

- Enthusiasm
- Honesty and dependability
- Initiative
- Sense of humor
- Loyalty
- Industriousness
- Tact and courtesy
- Friendliness
- Sense of fair play
- Cooperativeness

c. Undesirable traits of employees

- "Using" (exploiting) other people
- "Politicking" -- currying favors
- Running down other people
- Taking credit for ideas or achievements of others
- Gossip, tale bearing
- Being jealous
- Being indifferent to suggestions and criticisms
- Showing little consideration for the rights of others
- Being an "apple-polisher"
- Griping to everyone that will listen
- "Stealing" sales or easy jobs from fellow workers
- "Acting" as a supervisor

7. To understand the things that help maintain the confidence and respect of one's co-worker

a. Maintaining good human relations

- Treat people as individuals
- Don't pass the buck
- Be loyal to fellow workers
  - Go about the job cheerfully
  - Help others when they need help
  - Seek promotion on basis of merit
- Be honest, patient, and sincere

8. To profit the most from supervision by having the right attitude toward your supervisor, your job, and your employer

a. What employers provide

- Space and equipment
- Training
- Working conditions
- Financial benefits

b. What employers expect

- Regular attendance
- Adherence to business rules and policies
- Respect for authority
- Personal authority
- Personal characteristics
- Growth in performance of the job

c. Understanding your supervisor

- Supervisors are chosen by management because:
  - They know the jobs of the people they service
  - They know the rules and policies of the store
  - They can handle people well
  - They can improve job methods and production
  - They can teach the jobs they supervise
- Supervisors are hired by management to help the employee improve himself and the business

d. Foundations of good relations with supervisors

- Be sold on the aims and purposes of the business where you work
- Make good use of constructive criticism
- Be loyal to supervisors
- Carry out assigned responsibilities
- Recognize the supervisor as an individual
- Contribute new ideas

e. Profit from instruction -- some tips to help you benefit from supervisory instruction

- Preparation
- Receive instruction
- Perform the job; do the job well

9. To make practical application of the principles of human relations

a. Problem solving

- Identify the problem -- state the problem
- Get the facts or information
- Determine the solution or possible solutions
- Weigh the solutions and decide
- Carry out the decisions

b. Involve the people that are involved in the problem situation in arriving at the decision

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

This unit should be taught early in the year. Reference materials are somewhat limited. The evaluation forms and related materials which are a part of this unit should be helpful. Classroom discussion of actual student and teacher experience should add much to the effectiveness of the unit.

This unit should be extremely popular with students and employers. Employers are quick to point out the importance of good employer-employee relations and the importance of an employee being able to get along with fellow workers. Many businessmen list personal traits and attitudes as the major reason for dismissal of new employees rather than incompetency.

Students should realize the importance of a pleasing personality, what a good personality is, and how one may improve his personality.

A new employee has to prove himself to his employer and fellow employees. Usually he must prove himself early or often times he will cause resentment and lose the opportunity for help and cooperation. Many times older employees resent new young employees because they are concerned about their jobs. There is nothing personal, but to some the young employee represents a job threat. Student employees may largely overcome this attitude by asking their help, showing courtesy, and by demonstrating a willingness to learn.

Student Goals

Students should understand that human relations and personality traits are very important to the success of an individual and of a business. Good skill in human relations will be helpful in any vocation one may follow later in life. Each student should know that human relations and personality traits are acquired and that they should work hard toward developing desirable ones. With teacher help, each student should define the kind of person he wants to be -- to set goals. A list of characteristics desirable in human relations will be helpful.

Providing the Class Instruction

This unit should be taught as an integral part of the course in agricultural occupations. It should be taught by the regular problem-solving procedure. Classroom instruction followed by supervision of the students at the training stations should be functional. The following problems are suggested for class instruction to secure the desired learnings:

1. What are the basic human motives that affect employer-employee relations?
2. What is the human relations role of an employee of a business?
3. What are the problems of adjusting to the job?
4. How important is a pleasing personality to one seeking a job in a retail business?
5. How develop desirable work habits?
6. What is involved in getting along with the people we come in contact with in business?

7. How important is it to maintain the confidence and respect of our co-workers?
8. How benefit the most from supervision on the job?
9. How can we improve our human relations?

Teaching Suggestions

The following teaching techniques and aids are suggested:

Have a local businessman meet with the class at the beginning of the unit and discuss traits and characteristics that they look for in an employee. Businessmen may be interviewed at their place of business and the recording played in class.

Have the class to visit a good-size agricultural business to study human relations in action.

Have students think of some businesses (not name) that they and their parents hesitate to do business with because of poor human relations and personality traits. Make a list of undesirable characteristics and traits. Do the same thing for a place where the students and their parents like to do business. Compare the two lists. Avoid naming the businesses or the individuals in each case.

Much use should be made of the tape recorder and of the mirror. Role playing should be taped and played back for study. Students should identify the traits and characteristics of each other and study them. They should suggest ways to improve the undesirable ones.

Special effort should be made to take advantage of self evaluation forms.

a. At the beginning of the unit use EV-2, EV-3, and EV-4. Have students rate themselves as they see themselves. Have each student rate two other members of the class beside themselves on EV-3. This may be done on the same sheet. After the evaluation is complete, return each form to the first student. Care should be taken that each boy looks at his rating in an objective manner and no one is belittled by the ratings.
b. Have each class member fill out EV-4. Go over evaluations. Allow students to point out and discuss their faults and weaknesses and ways of improving them.
c. EV-6 may be used to determine the understanding the class has of human relations.

Effective use may be made of case situations such as those on page 87. Students may supply other situations which they know of or that may have happened to them.

Students should be familiar with EV-7 which may be used by teacher and employer to evaluate them.

The tips on page 88 should be helpful in preparing students to receive the most benefit from on-the-job supervision.

Student Participation

Students may give short talks on the importance of human relations, characteristics of a good personality, and other topics related to the unit.

Students should go over the questions on page 89 with their employer and get them answered.

Panel discussions may be conducted. The "do and don't" on page 90 can be helpful as a guide for discussion.

Students should evaluate themselves at the beginning and pinpoint areas in which they need to strive for improvement.

Have each student, at the appropriate time, complete EV-2 through EV-6 and follow the completion of each with a class discussion.

Getting Decisions Made and Carried Out

The students should put into practice the decisions arrived at in class. Students should be asked to make verbal application of the conclusions arrived at in class -- followed by practice at the training stations. The vocational agriculture teacher should work with the employers to get the learnings studied in class carried out on the job.

References

Books

Fundamentals of Selling; Wingate and Nolan, Seventh Edition, (Southwestern Publishing Company, Cincinnati 27, Ohio.)

* Human Relations in Business; Davis, (McGraw-Hill Book Company, New York, New York.)

Booklets

"Your Personality and Your Job;" Sinick, Science Research Associates, Inc., Chicago 11, Illinois

"What Employers Want;" Worthy, Science Research Associates, Inc., Chicago 11, Illinois

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* Teacher reference

REFERENCES ACCORDING TO LEARNINGS

1. To understand the basic human motives as they affect employer-employee relations	Fundamentals of Selling, pp. 163, 165, 189-90 * Human Relations in Business, pp. 444-65
2. To understand that the student has an important human relations role as an employee in a business	Fundamentals of Selling, pp. 169-83, 192
3. To understand the problem of adjusting to the job	Fundamentals of Selling, pp. 169-73, 189-92, 202-06 * Human Relations in Business, pp. 51-54 "What Employers Want," pp. 31-34
4. To understand the importance of a pleasing personality	Fundamentals of Selling, pp. 179, 183, 188-209 "Your Personality and Your Job," p. 44 "What Employers Want," pp. 19-21 EV-2, 3, and 4
5. To develop desirable work habits	Fundamentals of Selling, pp. 162-63, 188-90, 202-03 "Your Personality and Your Job," pp. 44-48 EV-5 and EV-7
6. To understand the importance of getting along with the people one comes in contact with	Fundamentals of Selling, pp. 188-203, 433, 591-92 "What Employers Want," pp. 34-36

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* Teacher reference

7. To understand the things that help maintain confidence and respect of one's co-workers	Fundamentals of Selling, pp. 169-73 189-92, 204-06
8. To profit the most from supervision	Fundamentals of Selling, pp. 20-22 * Human Relations in Business, pp. 174-90 Conclusions to previous problems in this unit
9. To make practical application of principles of human relations	Conclusions to all the previous problems dealt with in this unit

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* Teacher reference

EV-2
Agricultural Occupations

Name ______________________________

Date ______________________________

Rating ____________________________

SELF ANALYSIS OF PHYSICAL CHARACTERISTICS

Frequently we offend others unknowingly. The list below was compiled from the results of hundreds of answers to the question, "What physical traits keep people from presenting a good appearance and hence hurt their personalities?" Place a check mark before each thing that applies to you.

_____ Dirty fingernails
_____ Dirty hands
_____ Beard
_____ Yellow or unclean teeth
_____ Visible blackheads
_____ Pimples on face
_____ Dirty neck
_____ Dirty ears
_____ Greasy hair
_____ Dirty scalp
_____ Dandruff
_____ Hair too long
_____ Ragged fingernails
_____ Dirty shirt
_____ Soiled underclothes
_____ Baggy trousers

_____ Unshined shoes
_____ Dirty, dusty shoes
_____ Body odor
_____ Halitosis
_____ Too few baths
_____ Inappropriate clothes
_____ Stoop shoulders
_____ Awkward posture
_____ Hair not combed
_____ Greasy skin
_____ Broken shoestring
_____ Buttons missing
_____ Clothes fitting poorly
_____ Dirty handkerchief
_____ Dirty collar and cuffs
_____ Run-over heels

Number of checks _______

If you checked fewer than five items, you are neater and better groomed than the average college student.

If you checked between five and ten items, you are below average in neatness and should do something about it now.

If you checked more than fifteen, you are in pretty bad shape. Drastic action is necessary.

Look over the items that you checked. Each one is a personality defect in the eyes of other persons. Each defect can be eliminated.

EV-3
Agricultural Occupations

Name ______________________________
Date ______________________________

HOW DO I RATE?

It is easy to evaluate and criticize others. The real test is when we take a look at ourselves. Do you see yourself as others see you?

Instructions: Answer the questions below as truthful as possible. Answer in the first blank only: use "Y" for yes, "N" for no, and "S" for seldom.

	Your Rating	Rating by Fellow Students #1	Rating by Fellow Students #2
1. I compliment those who do good work			
2. I go out of my way to be helpful			
3. I seldom criticize the mistakes of others			
4. I am careful not to embarrass others			
5. I listen attentively to people and encourage them to tell me their needs			
6. I am careful not to interrupt people abruptly to make a remark I think important			
7. I avoid petty arguments			
8. I am careful not to intrude with my opinions and notions when I have not been asked for them			
9. I say "thank you" for small favors			
10. I say "excuse me" or "pardon me" when walking in front of people			
11. I hold a handkerchief to my face to sneeze			
12. I am careful not to become hostile and sarcastic			
13. I am calm and patient under trying conditions			
14. I talk in a friendly, quiet tone of voice			
15. I am careful not to make gestures or grimaces			
16. My voice and manner tell all that is necessary			
17. I am tolerant of other people's ideas and customs			
18. I control my desire to make "wisecracks"			
19. I am careful not to gossip			
20. I am careful not to make fun of anyone			

EV-4
Agricultural Occupations

Name ____________________

Date ____________________

Score ____________________

INVENTORY OF YOUR PERSONALITY

Below you will find a list of questions that constitute an inventory of positive personality traits. Answer these questions according to the instructions. Your instructor will evaluate the results in terms of an ideal person.

Instructions: Answer each question YES or NO in the space provided. If you cannot honestly answer the question, put a question mark (?) in the space. ANSWER THE QUESTIONS HONESTLY!!!

_____ 1. Do you tend to argue or disagree when someone gives his point of view about which you disagree?

_____ 2. Can you always trust yourself when handling money that does not belong to you?

_____ 3. Do you usually hate to see the other fellow get promoted or get something you don't have?

_____ 4. Do you usually want to share your responsibility with someone?

_____ 5. Are you easily discouraged?

_____ 6. Do you go out of your way to give assistance to a friend?

_____ 7. Do you tell people who have done you a favor that you appreciate it?

_____ 8. If you dislike a person, do you enjoy telling him what you think of him?

_____ 9. Do you usually feel tired and dull?

_____ 10. Do you, in most cases, have to be coaxed to talk about yourself or the things you have done?

_____ 11. Can you stand to have someone else, other than your close friend, be the center of attraction in a crowd?

_____ 12. Have you ever copied from someone else in any of your school work?

_____ 13. Are you willing to devote extra time and effort to your work even though it means giving up some pleasure?

_____ 14. Can you always be depended upon to carry out an assignment without assistance from anybody?

_____ 15. Do you feel as ambitious at three o'clock in the afternoon as you felt at ten in the morning?

_____ 16. Are you always glad to help new people in their school work or in finding their way around and in meeting other people?

_____ 17. Have you often gone out of your way to express gratitude to someone?

_____ 18. Would you rather quit a job than be "bawled out" by your employer?

_____ 19. Are you always cheerful when you are trying to "cheer up" your friends?

_____ 20. Are you inclined to tell a bigger story than the other fellow?

_____ 21. Do you ever cross the street to avoid meeting people you do not like?

_____ 22. Do your friends ever trust you with their personal belongings?

_____ 23. If you worked in a store and your neighboring clerk, whom you knew rather well, wanted to exchange lunch hours, would you object to this?

_____ 24. Do you seek and depend upon the advice of others in most things which you are asked to do?

_____ 25. Are you eager to get to work or start a project which you know is going to take a long time?

_____ 26. Do you avoid the responsibility of offering your time and services for such things as Red Cross, Community Chest, or other such groups?

_____ 27. If a customer should call your attention to a mistake you made in favor of the store, would you thank him?

_____ 28. When your friends and the people you meet are sad or unhappy, does this tend to make you unhappy?

_____ 29. If you were working in a store, could you restrain your feelings toward a customer if he had you show him twenty samples of an item and then refused to buy?

_____ 30. Do you exaggerate your abilities when talking at home or to friends?

_____ 31. Have you ever shut off the radio or television or changed stations because you could not stand the program, even though others in the room may have been listening?

_____ 32. Have you ever misrepresented the facts to your parents or friends in order to get them to allow you do do something?

_____ 33. Do you habitually eat in the presence of others without sharing with them?

_____ 34. If you were going to buy some clothes for yourself, would you ask someone to go along, other than your parents, to help you buy?

_____ 35. Can you stick to a tiresome task for a long time without someone's prodding or encouraging you?

_____ 36. Do your parents or your employer have to tell you everything they want you to do?

_____ 37. Are you slow to show your appreciation to someone because you do not want to feel obligated to them?

_____ 38. Do you usually smile when being kidded by your friends?

_____ 39. When working on a difficult assignment do you frequently become disgusted and discouraged?

_____ 40. Do you usually make an effort to tell of your abilities and accomplishments to those with whom you become acquainted?

Diagnosis of Personality

Your instructor will review in class each question and you will be asked to decide the correct answer on the basis of what an ideal person would have done. The questions were constructed in such a manner that you actually evaluate yourself on the ten positive traits of a pleasing personality. This chart will help you diagnose your shortcomings. Circle the number below where your answer did NOT agree with the one decided upon in class.

Total the numbers encircled and note the personality traits in which you showed the greatest weaknesses.

Personality Traits	Question Numbers				Errors
Forebearance	1	11	21	31	______
Integrity	2	12	22	32	______
Unselfishness	3	13	23	33	______
Confidence	4	14	24	34	______
Vigor	5	15	25	35	______
Helpfulness	6	16	26	36	______
Gratefulness	7	17	27	37	______
Self-restraint	8	18	28	38	______
Cheerfulness	9	19	29	39	______
Modesty	10	20	30	40	______
				Total errors	______

Note: Use this chart to analyze and improve your weak points.

EV-5
Agricultural Occupations

Name ______________________

Date ______________________

Evaluation ______________________

SELF ANALYSIS OF WORK ACTIVITIES

This is a self analysis of your work activities, designed to help you know yourself and to assist you in making personal adjustment. Work requires mental and physical effort. A sense of duty enters into the performance of certain tasks, particularly the monotonous and distasteful ones. The activities of work are those that need to be performed for the completion of the job on time. To the right of each work activity listed below, place a check mark in column that most nearly describes your case.

Work Activity Completed on Time	Always	Often	Seldom	Never
1. School work				
2. Chores and household duties				
3. Special home projects				
4. After-school employment				
5. Special school projects				
6. Saturday work				

Evaluation ______________________

SELF ANALYSIS OF HEALTH ACTIVITIES

This is not a test, but is intended to help you know yourself and to assist you in making personal health adjustments. The value of this self analysis depends on the honesty with which you complete it. Place a check mark in the column that most nearly describes each of your health habits.

Activity to Promote and Maintain Health	Always	Often	Seldom	Never
1. Eat balanced meals				
2. Have regular eliminative habits				
3. Keep body clean				
4. Secure sufficient rest and sleep				
5. Take adequate physical exercise				
6. Secure abundance of fresh air				
7. Prevent undue waste of nervous energy				

Evaluation ______________________

Be prepared to discuss in class, as a result of your self analysis, those work and health activities which you need to improve.

EV-6
Agricultural Occupations

Name ____________________

Date ____________________

Score ____________________

HUMAN RELATIONS WITH FELLOW WORKERS

Section I

Multiple choice questions. Choose the answer which is MOST correct for each of the following questions. Place your selection in the blank at the left.

_____ 1. Many occupations deal primarily with machines, equipment, or paper work, that is, they deal with things. In business, however, most of the jobs involve close contact with (a) employers, (b) supervisors, (c) people, or (d) other workers.

_____ 2. As a group, people are very much (a) different, (b) alike, or (c) it is difficult to say.

_____ 3. It is possible that the things which you enjoy may (a) appeal to others, (b) not appeal to others, or (c) be distasteful to others

_____ 4. Which of the following do most people have in common? (a) right to work at a job of own choice, (b) desire to get ahead, (c) desire to be accepted and approved, (d) all of these, or (e) none of these.

_____ 5. The best way to achieve your goals in life is to follow your rights and desires and (a) also the wish of your boss, (b) what your parents say, (c) the Golden Rule, or (d) just what you feel like doing.

_____ 6. Do the best work you can for the important jobs and (a) don't worry about the little jobs, (b) let others do the little jobs, (c) also do the most routine jobs, or (d) everything else will take care of itself.

_____ 7. Plus doing the best work you can, it is important to (a) learn as much as you can about your company, (b) see what you can get on your boss, (c) keep up on the latest gossip, or (d) be seen and not heard.

_____ 8. The right to think and act as individuals (a) is not, (b) may be, or (c) is--normally shared by most people.

_____ 9. The statement that "Retailing is people" is (a) not true, (b) only part true, or (c) all true.

_____ 10. Which of the following is not a desirable trait of an employee? (a) sense of humor, (b) tact, (c) indifference, or (d) initiative.

_____ 11. Exploiting others toward our own efforts is (a) desirable, (b) OK if you can get away with it, (c) undesirable, or (d) not too bad.

_____ 12. When you are criticized by your superior, it is best to (a) act indifferent, (b) tell him to do it himself, (c) take it constructively, or (d) shrug it off.

_____ 13. Loyalty includes (a) working hours only, (b) both the time to and from work, (c) all the time, or (d) just when you feel like it.

_____ 14. To approach your job with enthusiasm, it is necessary to (a) fool the boss, (b) impress your co-workers, or (c) be glad to be part of the team.

_____ 15. It is not necessary to be friendly as long as you (a) do your job, (b) act as though you are, (c) get to work on time, or (d) none of these.

_____ 16. When you have a question, it is best to (a) do the job the way you think it should be done, (b) wait and ask it later, (c) not bother your boss with it, or (d) ask it when it comes up.

_____ 17. When you have joined a clique, you have (a) picked sides, (b) helped yourself, (c) joined the "in" group, or (d) become a member of the team.

_____ 18. A good way to get along in your new job is to (a) be a "know-it-all," (b) be willing to learn, (c) show your co-workers how smart you are, or (d) run to your boss with every question you have.

_____ 19. Showing that you are not afraid of work means to (a) work as hard as you can, (b) be willing to tackle any job assigned, or (c) work harder than any of your co-workers.

_____ 20. The need to show appreciation to fellow workers (a) will get you nowhere, (b) is strongest when you are new, (c) isn't really necessary at all, or (d) is just on the surface.

_____ 21. You should start calling your co-workers (a) by their first names as soon as possible, (b) by their nick-names to show you are really in, (c) by their last name only, or (d) by their proper names until you have been around awhile or been told different.

_____ 22. If you do all of the things we have suggested you will have (a) everyone liking you, (b) a few friends, (c) a better chance of being well liked, or (d) the reputation for being an apple-polisher.

_____ 23. The people you can learn the most from are (a) always your bosses, (b) your best buddies, (c) those who show an interest in you, or (d) the ones you eat lunch with.

_____ 24. Human behavior is usually (a) pretty easy to understand, (b) not too predictable, (c) easy to predict, or (d) none of your business.

_____ 25. The total morale of your business is (a) beyond your control, (b) a matter for the boss, (c) each employee's problem, or (d) unimportant.

Section II

True or false. Mark each of the following with a "T" if true or an "F" if false. Mark in the blank to the left of the question.

_____ 1. Most employers don't care what you do with your own time.

_____ 2. Respect for authority is not necessary as long as you get the job done on time.

_____ 3. Store rules and policies are set up to hinder the employees.

_____ 4. Regular attendance is of secondary importance to your boss.

_____ 5. Your pay is the only financial benefit your employer can provide.

_____ 6. Most employers don't care about working conditions.

_____ 7. It is up to you to learn a job, not for the boss to train you.

_____ 8. Your employer provides space and equipment for your work.

_____ 9. Understanding your supervisor is unimportant.

_____ 10. You need to be sold on the aim of your business.

_____ 11. Constructive criticism is used only to make you feel bad.

_____ 12. Look upon the boss as the boss and not as an individual.

_____ 13. Any ideas you get you should keep to yourself unless you will get paid for them.

_____ 14. There is no need to prepare to take instruction.

_____ 15. If you can't hear when you are being told something, it is the fault of the person doing the telling.

_____ 16. The idea behind most instruction at work is to improve the over-all production.

_____ 17. Promotion based on your own efforts will bring about ill feelings.

_____ 18. People are different and the sooner you treat them this way, the better off you will be.

_____ 19. Everyone makes mistakes.

_____ 20. When you make a mistake, blame it on someone else if possible.

_____ 21. Gossip is a good way to make friends when just starting a job.

_____ 22. People will act the same all of the time.

_____ 23. People's moods are none of your business.

_____ 24. Most people desire to make an honest contribution to their place of employment.

_____ 25. You have no right to have your opinions heard when you are young.

Section III

Define the following terms in your own words.

1. esprit de corps --
2. initiative --
3. "apple-polishing" --
4. passing-the-buck --
5. industriousness --
6. "politicking" --
7. capital investment --
8. financial benefits --
9. constructive criticism --
10. human relations --
11. apparent problem --
12. real problem --
13. emotion --
14. clique --
15. look sharp --

Section IV

In your own words, what has been the most interesting area of discussion which we have covered in Agri-Business up to now? What work do you feel has done you the most good in your jobs? If you need more room, use the back of this sheet.

EV-7
Agricultural Occupations

Trainee ________________ Date __________

Training Station ________________________

Evaluation ____________________________

EMPLOYER-TEACHER EVALUATION

Instructions: Please rate the trainee on each of the competencies (abilities) listed below. Rate by placing a check mark in the appropriate column to the right of each competency. Use the following as a basis for rating.

x -- No chance to observe	3 -- above average
1 -- Below average	4 -- Excellent
2 -- Average	5 -- Superior

GENERAL COMPETENCIES (Abilities)	x	1	2	3	4	5
Accepts and carries out responsibilities						
Attitude toward work; use of work time						
Adaptability; ability to work under pressure						
Speed and accuracy of work						
Attentiveness to work being done						
Promptness in reporting for work						
Care of work space						
Care of materials and equipment						
Observing, imagination						
Attitude toward customers						
Attitude toward fellow workers, supervisors						
Personal appearance, grooming, fitness						
Initiative						
Enthusiasm						
Cheerfulness, friendliness						
Courtesy, tact, diplomacy, manners						
Helpfulness						
Honesty, fairness, loyalty						
Maturity, poise, self-confidence						
Patience, self-control						
Sense of humor						
Selling ability, personality for selling						
Total						

JOB SKILLS	x	1	2	3	4	5
Knowledge of merchandise						
Mathematical ability						
Penmanship						
Speech, ability to convey ideas						
Stockkeeping ability, orderliness						
Use of good English						
Desire to serve farm people						
Like people, not a fear of people						
Fill orders						
Check incoming freight						
Mark merchandise for sale						
Use an adding machine						
Write sales slips						
Make sales						
Total						

Rating for liabilities:

x -- No opportunity to observe
1 -- Not noticeable
2 -- Seldom noticed
3 -- Frequently noticed
4 -- Highly noticed
5 -- Pronounced

LIABILITIES	x	1	2	3	4	5
Annoying mannerisms						
Familiarity						
Making excuses						
Tendency to argue						
Tendency to bluff or "know it all"						
Tendency to complain						
Total						

PLEASE FEEL FREE TO WRITE COMMENTS BELOW

Evaluated by ______________________

Position ______________________

CASE STUDIES

Case #1

John Smith, who works in a farm service store, tells his friends that he doesn't like his job very well. One reason is that he thinks his manager is grouchy. If he comes by and sees him resting for a minute, he says, "Better get with it, Smith; if you didn't goof off so much, your sales wouldn't be the lowest in the store."

One day when John had made a sale and hadn't had a chance to finish up, the manager came by and said, "Put these seed back on the rack. How do you expect the customers to find what they want when the seed is not out where they can see it?"

Questions on Case #1

1. If John's sales were really the lowest in the department, do you think they would go up when the manager told him to "get with it"?
2. What could the manager do that would be more helpful?
3. Is it proper--permissible for people to sit down and rest during store hours? Under what conditions? What is the policy of the store where you work?
4. Why did the manager's remark about getting the seed back on the rack cause resentment?

Case #2

The other day I went into a store, and after buying a pair of work shoes, I walked through the seed department and decided to look around. A salesman approached and said, "May I help you?" I said, "No, thanks, I'm just looking as I walk through." The salesman said, "Well, if you should find anything you like, I'll be glad to help you, I'm William Cox." After this, he walked away. I continued looking through the merchandise on the racks, and another salesperson approached saying, "Hello, Mr. Cox, are you finding something you'd like to buy today?" I said that I was "just looking." As I kept looking I finally found a sprayer that I wanted to try out. I headed for the check-out counter with the sprayer, but I was somewhat hesitant, as I had run into this same situation in this store before. The second man saw me and said, "I'll be glad to give you help if you need any." About then, the first clerk arrived on the scene, glaring at the second man and mumbling something I couldn't understand. As I went to the counter, I could hear him say angrily, "Well, that works both ways, you know, some people around here had better be careful."

Questions on Case #2

1. What is the first duty of the store?
2. Why are clerks in the store?
3. How did the customer feel? Will he come back?
4. What impression has this incident given the customer?

SUPERVISION AND PERFORMANCE

While receiving training at your station (center), you can gain valuable experience from your supervisor if you have a learning attitude and a desire to excel.

Here are some tips that will help you benefit from supervision:

1. Prepare yourself
    1. Be at ease. You will have every opportunity to learn.
    2. Stand or sit where you can see and hear clearly.
2. Receive instructions
    1. Repeat each step to yourself.
    2. Connect what you learn with what you already know.
    3. Learn steps in logical order -- not too many at once.
    4. Ask for further explanation on doubtful points.
    5. Be sure that you know what the job is and why, when, where, and how you are to do the job.
3. Perform the job
    1. Ask the supervisor to watch you.
    2. Tell of each step as you perform it.
    3. Ask questions -- do not guess.
    4. Make new knowledge or a skill a part of you by talking about it and developing a sense of appreciation for it.
4. Get out production
    1. Work on your own.
    2. Strive for accuracy -- speed will follow.
    3. Ask questions whenever necessary.
    4. Make a list of all the steps in your job and refer to it often.

QUESTIONS PERTAINING
TO
STORE-REGULATIONS FOR EMPLOYEES

Name of Store ______________________ Kind of Store ____________

Name of Proprietor or Manager ______________________________

Source of Information ______________________________________

1. What is the procedure for reporting to work (checking in)?

2. What is the procedure for leaving work (checking out)?

3. What are the policies concerning the lunch hour?

4. What action does the store take regarding tardiness?

5. What special dress or uniform regulations does the store require?

6. What are the rules and regulations regarding personal use of the telephone?

7. What are the rules and regulations regarding personal conduct, such as visiting with friends, chewing gum, using tobacco, and the like?

8. What procedure does the store require when employees cannot report for work?

9. When and how do employees receive their wages?

10. What is the store policy for vacation and sick leave?

11. What is the store rule about cashing customers' checks?

12. What should employees do in case they detect a shoplifter?

13. What should employees do in the case of accidents --

    a. To customers?

    b. To fellow employees?

14. What are the regulations regarding returned or defective merchandise?

15. Are there other store regulations pertaining to employees that have not been covered in previous questions?

DO AND DON'T FOR STUDENT EMPLOYEES

Do

1. Be on time to work
2. Smile
3. Ask questions
4. Do what you say you will
5. Make suggestions
6. Talk with employer about problems, not someone else
7. Use "hello," "thank you," "yes, sir," -- not slang
8. Keep your eyes and ears open
9. Be cheerful
10. Talk in terms of others
11. Be energetic
12. Be neat
13. Show an interest
14. If hurt, tell employer at once

Don't

1. Smoke while waiting on customers
2. Smoke in warehouses
3. Eat on the job
4. Hang around cash register
5. Argue, guess, gossip, and complain
6. Say, "I don't know," rather, "I'll find out."
7. Talk on price alone
8. Talk down to people
9. Be an expert
10. Make personal phone calls -- or receive them
11. Have buddies come by for visit

UNIT: STORE SKILLS

Number of class periods ________________ Month(s) ________________________

Major objective to be attained through the unit: To master the store skills necessary to be an effective employee in an agricultural-supply business.

Learnings Needed to Reach the Objective

(The teacher will need to modify the learnings to meet the needs of the group. This unit should include a number of demonstrations and much supervised practice in order to develop the skills needed.)

1. To know the kinds of supplies and services provided by agricultural-supply businesses

    a. Supplies handled by the business

    -- Kinds of seeds (garden -- field)
    -- Feeds
    -- Agricultural chemicals
    -- Fertilizers
    -- Other agricultural supplies
    -- Other supplies (including hardware)

    b. Services rendered by business

    -- Feed grinding
    -- Sterilization
    -- Insect and parasite control
    -- Spreading lime -- fertilizer
    -- Small equipment service
    -- Other services

2. To learn location of merchandise (supplies) in the business

    a. Prepare a diagram of the floor of the store, to scale

    -- Show departments
    -- Show location of merchandise in departments
    -- Locate items

    b. Make diagram neat and tidy

3. To develop a merchandise and information folder

    a. Develop a list of things to put in the folder

    -- Pamphlets
    -- Booklets
    -- Photographs
    -- Diagrams
    -- Tables

- -- Charts
- -- "Cut outs" from magazines and newspapers
- -- Mimeographed materials

b. Mark each bit of information with a number and prepare an index for easy reference in use

4. To perform routine housekeeping chores

Some routine duties are

- -- Police front and outdoor area around store
- -- Wash windows
- -- Sweep floors
- -- Dispose of trash and crating materials
- -- Dust and arrange stock
- -- Rearrange stock

5. To unload trucks and boxcars and store merchandise

Plan an unloading and storing operation

- -- Decide where to store merchandise (quick-turn-over merchandise: store up front or near dock for ease in handling)
- -- How to pick up heavy merchandise
- -- How to use carts and trucks
- -- How to stack merchandise in storing

6. To stock shelves

   a. Plan where to locate merchandise
   b. Amount of merchandise to put on shelves; storing extra packages
   c. Where to store glass containers, metal, and cardboard
   d. Open containers

7. To prepare displays

   a. Need for attractive displays
   b. Where to locate displays
   c. Size of displays to prepare
   d. Letter - color - design
   e. How long to leave displays up?

8. To make sales tickets and fill orders

(NOTE: Sales techniques to be dealt with in unit on: Salesmanship -- Selling)

a. Sales tickets

- -- Neat and accurate
- -- Clear sharp writing and figures
- -- Read price tag, etc.

- Prepare refund sales ticket
- Exchange sales
- Correct errors

b. Fill orders

- Weigh merchandise accurately
- Package and mark merchandise properly
- Be courteous to customer

9. To operate a cash register and make change

How to operate

- Punch keys
- Place money in cash register
- How to count back change from a purchase
- Correct errors

10. To measure and package merchandise

a. Weigh goods

- Importance of being accurate
- How scales work
- How to read scales
- How to read charts

b. Measure goods

- Use of yardstick or tape

c. Package materials

- Need for secure packaging
- Mark or label packages

11. To deliver merchandise

a. Load truck for deliveries

- Load in reverse order of delivery

b. Contact customer upon arrival at delivery point

- Courtesy
- Where to unload merchandise
- Handling of merchandise
- Consideration of walks, drives, yards, and fields in driving on the farm

12. To assemble small items of equipment

a. Use of manufacturer's manuals
b. Speed and accuracy in assembling

- c. Check for proper function or operation
- d. Secure parts and manual for equipment

13. To interpret labels, tags, and charts on merchandise

    - a. Various kinds of labels, tags, and charts in the store

        - -- Labels on cans, boxes, bottles, equipment, etc.
        - -- Tags of seeds, fertilizers, feeds, and plants
        - -- Charts on insects and diseases

    - b. Importance of being able to read and understand these
    - c. Importance of being able to interpret instructions to customer promptly and accurately
    - d. Importance of being able to:

        - -- Identify insects by use of charts
        - -- Identify diseases by use of chart
        - -- Determine seeding and fertilizing rates by use of charts

14. To use telephone

    - a. Answering the phone

        - -- Answer promptly
        - -- Speak distinctly and clearly
        - -- Courteous tone of voice
        - -- Identify store and give your name

    - b. Take orders over phone

        - -- Have pencil and pad handy
        - -- Eliminate store noise by placing receiver face down, when away from phone
        - -- Be sure you have order correct

    - c. Replace receiver gently
    - d. Return calls promptly

15. To operate an adding machine

    - a. How to operate

        - -- To add
        - -- To subtract
        - -- To multiply

    - b. How to correct errors

16. To take an inventory

    - a. Types of inventories

        - -- Monthly

-- Yearly

b. Procedures to follow in taking inventories
c. Kinds of inventory sheets used
d. Tally and arrive at value of merchandise

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

Retail selling is a complicated business. Agricultural-supply businesses are important in modern-day agriculture. There are many opportunities for challenging and rewarding experiences in such businesses. Successful occupational experience in an agricultural-supply business will depend to a large degree on how students are oriented for their supervised occupational experience and how well they plan and engage in these experiences.

This unit contains many specific learnings and abilities that students will need to perform with maximum efficiency and skill. These skills and abilities may at first glance seem simple, easy to master and of secondary importance. However, without practice and understanding of each of these skills the student will make errors, create confusion, and cause employers to question the quality of the classroom instruction. It is very important that each student understand and have practice performing these skills and abilities before coming in contact with customers.

The abilities and skills to be taught should be determined by the local situation. Cooperating employers and the advisory council should help determine the abilities and skills that students will need.

The skills and abilities needed in most agricultural-supply businesses are listed here:

1. Making out sales tickets
2. Using telephone
3. Using scales
4. Using cash register
5. Preparing displays
6. Stocking shelves
7. Taking inventories
8. Packaging and preparing purchases
9. Interpreting charts, tags, and labels
10. Using office equipment

Student Goals

In dealing with this unit, the teacher should cause each student to set goals similar to these:

1. To know the kinds of agricultural supplies handled and services rendered by the business where he is to work
2. To know the location of the various merchandise in the business

3. To perform routine housekeeping chores efficiently
4. To unload trucks and boxcars and properly store merchandise
5. To stock shelves, making them neat and attractive
6. To prepare displays
7. To fill orders from sales tickets
8. To prepare sales tickets
9. To operate a cash register and make change
10. To weigh and package merchandise
11. To deliver merchandise
12. To assemble small items of equipment
13. To interpret labels, tags, and charts
14. To use good telephone procedure
15. To use an adding machine
16. To take an inventory

Providing the Class Instruction

The following is a suggested series of lessons to be dealt with including problems, demonstrations, and field trips. The teacher will need to formulate other lessons that are appropriate to his group.

1. What kinds of supplies are sold in agricultural-supply businesses?
2. What kinds of services (other than sales) are rendered by the agricultural-supply stores in the community? (Have students make a list.)
3. Develop a diagram showing the location of the major supplies in an agricultural-supply business. (Each student should prepare one of the business in which he is to work.)
4. Develop a merchandise and information folder; indexing it for ready reference. Start with leaflets, pamphlets, charts, and add materials throughout the year.
5. What routine housekeeping chores are necessary to keep an agricultural-supply store neat and attractive?
6. How unload and store merchandise? (Need for a plan before starting an unloading operation, considering where to store, stacking, safety, etc.)
7. How stock and keep shelves stocked? (Perhaps, a field trip to a store to observe and study well stocked shelves which are neat and attractive. And, in which there is a logical arrangement of the merchandise.)
8. How prepare displays of merchandise? (Perhaps, a field trip to observe some well prepared displays in one or more agricultural-supply stores.)
9. Demonstration and practice in writing out sales tickets. (Secure sales tickets from agricultural-supply businesses and have boys prepare sample sales tickets.) Check each for clarity, neatness, and accuracy.
10. Demonstration and practice in operating a cash register and in making change. (Cash register firms will be willing to make a loan of a few machines for practice.)
11. Demonstration and practice in weighing, measuring, and packaging merchandise. (Business firms which sell scales will likely make a loan of these for a few days.)
12. What are the essential features in making a delivery to a customer? (List the essential features.)
13. Demonstration and practice in assembling small items of equipment. (Perhaps, local stores will allow the teacher some items for practice in assembling at school.)

14. Demonstration and practice in the classroom in interpreting
    a. Charts
    b. Labels
    c. Tags
15. What are the essential features in dealing with a customer over the phone? (Follow conclusion with practice in answering a telephone as an employee in a business.)
16. Demonstration and practice in operating an adding machine. (Secure the loan of one or more from the business department of the school or business firms in town.)
17. How take an inventory? (Secure inventory sheets from local business concerns and get from them the procedure they follow in taking an inventory. Perhaps, it would be well to let boys take an inventory of everything in the classroom and the farm mechanics shop for their practice work as well as help inventory the business where they work.)

Teaching Suggestions

In teaching this unit, much use should be made of demonstrations followed by practice sessions, visiting local businesses, field trips, and role playing. It is very important to provide an adequate amount of student participation with good supervision. These skills and abilities must be learned, not talked about.

Some suggested techniques to assist in teaching the skills in the unit are listed here:

Telephone:
The class should first understand the importance and proper use of the telephone. Once this understanding is secured, demonstrations and student participation should follow -- using a teletrainer. Role playing could include calling for a job interview, taking orders, following up a sale and numerous other situations. The class should evaluate each student. Conversations may be taped to further aid in evaluation. "Win More Friends by Telephone" on page 103 should be helpful in providing the instruction. Review on pages 104-5 and "Ten Characteristics of Good Telephone Usage" on page 105 may be used to evaluate students' progress and understanding.

Scales and Packaging:
The materials on pages 106-8 should aid in teaching and demonstrating the use of scales and packaging. Much use should be made of demonstrations and student practice. The exercises on pages 109-10 should be helpful in teaching the use of scales and packaging. Exercises may be developed in which the students weigh seed and other merchandise.

Cash Register:
Students should understand the importance of making change and using cash registers correctly. The materials on pages 111-12 should be an aid in teaching making change, and using cash registers. After classroom instruction and demonstrations, students should practice making change by

using the exercise on page 112. Students should then practice on cash registers using play money and role playing to help develop speed and accuracy. The class should evaluate the performance of each member.

Sales Tickets:

It is very important that students learn to fill out sales tickets with reasonable speed which are neat, correct, legible, and accurate. A poorly written or incorrect sales ticket may come back to haunt the trainee at the end of the month when the bookkeeper cannot read it or the customer returns demanding it be corrected. It is suggested that sales tickets, which have been correctly filled out by the manager be secured, from the training stations (centers). These may be used to illustrate how a properly filled out sales ticket should look. A transparency of a sales ticket similar to the one on page 113 may be used to teach the basic information needed on the ticket. Mathematical abilities such as those listed in the unit: agricultural mathematics may need to be developed here. Exercises similar to the ones on pages 114-18 should be used to provide students practice and to check their progress.

Merchandising:

The information on merchandising agricultural products on pages 119-24 should be helpful. Once an understanding of merchandising on the part of the students has been secured a field trip to an agricultural business to observe the merchandising methods used should be most helpful. The form on page 121 should be filled out by each student. If field trips are not practical or if further observation would be helpful, the students may be assigned various stores to observe. In either case the things they observed should be discussed in class. By securing items from stations and other stores students can practice building displays, stocking, and pricing goods. The information on pages 125-26 should be helpful when working with displays. Suggested classroom exercises:

1. Have each student prepare a display or poster board using pictures from magazines, their own drawings, and lettering. Have class evaluate.
2. Have students take materials and stock classroom shelves. Have class evaluate.
3. Divide class into groups of 2 to 3 students, and have each group build a large display featuring one product and related items. Have class evaluate.

The best display should be selected and with the manager's permission be placed in the place of business. Other displays which are superior should also be used in appropriate training centers. The teacher should work with managers to allow students to build displays and put up advertising materials. Students should ask their employers if they can:

1. Fix a special table or bargain area.
2. Fix a display up front of impulse items.
3. Set up a display of old slow moving items and/or odds and ends.

The form on page 122 may be used by the class to evaluate displays built at school and at their work stations. The student responsible for the display should explain the display and get the class suggestions.

Mathematical exercises on pages 123-24 should be useful in teaching pricing of goods. The following problems may need to be dealt with on merchandising:

How does effective displaying help in selling?
How build displays?
How take care of stock in a store?

Student Participation

Have students prepare a list of the major supplies sold and services provided by the agricultural-supply business of the community.

Have students prepare a diagram showing the location of the major supplies in the business in which they are to work.

Have students develop a merchandise and information folder; indexing it for ready reference. During the year as the different units are dealt with, useful leaflets, pamphlets, charts, and other materials should be filed in the folder.

Have students practice in the classroom:

-- Using the telephone
-- Using scales
-- Packaging supplies
-- Using cash registers
-- Filling out sales tickets
-- Stocking and pricing supplies
-- Preparing displays
-- Assembling and operating small equipment
-- Interpreting charts, labels, and tags
-- Using adding machines
-- Taking inventories

Have students keep up with items sold, amount of sales, and methods of merchandising used. They should report their experiences to the class.

Getting Decisions Made and Carried Out

Good teaching in the classroom and on field trips should be followed by supervised practice in the agricultural businesses. Many of the store skills can be practiced in the classroom following demonstrations. The demonstrations and practice at the school may include: preparing sales tickets, using a cash register, weighing seed and other merchandise, stocking shelves, using the telephone, using an adding machine, and preparing displays.

References

Books

Fundamentals of Selling; Wingate and Nolan, (Smith-Western Publishing Co., Chicago, Illinois -- 1959.)

Booklet

"Teletraining for Business Studies;" American Telephone and Telegraph Company. (May be secured from local telephone office.)

Circulars, Bulletins, and Pamphlets

"Tips On Making Change;" The National Cash Register Company, Dayton 9, Ohio

"How To Make Friends By Telephone;" American Telephone and Telegraph Company. (May be secured from local telephone office.)

"The Voice With A Smile;" American Telephone and Telegraph Company. (May be secured from local telephone office.)

"The Voice of Your Business;" American Telephone and Telegraph Company. (May be secured from local telephone office.)

"Making Your Windows Work For You;" The National Cash Register Company, Dayton 9, Ohio

Slides

Colored slides demonstrating the skills and use of the equipment in this unit may be obtained from the Demonstration Center, Reidland High School, Paducah, Kentucky. Cost per set of 25 slides -- $5.00.

Equipment Needed

Teletrainer telephone, secure from local telephone company
Adding machines
Cash registers
Scales
Sales-ticket boxes
Sales-ticket pads
Supplies to build displays -- sprays, seed, fertilizer, etc.
Shelves to practice merchandising and stocking

REFERENCES ACCORDING TO LEARNINGS

1. To know the kinds of supplies and services provided by agricultural-supply businesses	- Take a field trip to agricultural-supply business and have each student make a list of supplies sold - Have each student make a list of supplies sold in place of business where he is to do his supervised work experience
2. To learn the location of supplies in a business	- Take a field trip to have students sketch a diagram of where various

	supplies are located in the store - Have each student make a chart showing location of supplies in store where he is to do his supervised work experience
3. To develop a merchandise and information folder	- Have each student develop a merchandise folder in which he will place information on merchandise sold in the business where he is working
4. To perform routine housekeeping chores	- The teacher should discuss with the students the need for keeping the places of business attractive. And, the kind and number of chore jobs that are involved
5. To unload trucks and boxcars and store merchandise	- The teacher will need to get the students to understand and practice the skills involved in lifting and handling heavy containers. Also, he will need to demonstrate how to stack feed, fertilizer, and the like
6. To stock shelves	Fundamentals of Selling, pp. 111-12, 642-43 Instruction Sheet, pp. 119-20
7. To prepare displays	Fundamentals of Selling, pp. 259, 350, 485, 501, and 569 "Making Your Windows Work For You" Worksheet, p. 122 Information Sheet on Displays, pp. 125-26
8. To make out sales tickets	The teacher will want to secure sales-ticket boxes for student practice Worksheets, pp. 113-118
9. To operate a cash register and make change	"Tips On Making Change" The teacher will want to secure some cash registers for use in demonstrations and student practice Information Sheets, pp. 111-12

10. To measure and package merchandise	The teacher will want to secure scales for demonstrations and student practice Information Sheets, pp. 106-10
11. To deliver merchandise	The teacher should know the elements that consitute good delivery service for the agricultural businesses where his students work He should make these matters clear to the students
12. To assemble small items of equipment	The teacher will desire to secure several small items of equipment of the same kind for class work and practice He should exercise care in having the boys follow very carefully the manufacturer's manual
13. To interpret labels, tags, and charts on merchandise	Fundamentals of Selling, pp. 134, 496, 634-35, 636
14. To use telephone	Fundamentals of Selling, pp. 43, 507-12, 519 Teletraining, pp. 2-42 "How To Make Friends By Telephone" "The Voice With A Smile" "The Voice of Your Business" Information Sheets, pp. 103-05
15. To operate an adding machine	The teacher will want to secure some adding machines for instruction and practice at school
16. To take an inventory	The teacher will want each boy to help take an inventory in the place of business where he is doing supervised work experience

WIN MORE FRIENDS BY TELEPHONE. . .

1. What are the qualities of a good voice?
    1. Alertness
    2. Expressiveness
    3. Naturalness
    4. Pleasantness
    5. Distinctness

2. There is always time for courtesy
    1. Greet the caller pleasantly
    2. Use the customer's name
    3. Try to visualize the person
    4. Be attentive
    5. Take time to be helpful
    6. Apologize for errors or delays
    7. Say "thank you" and "you're welcome"

3. When receiving a call. . .
    1. Answer promptly
    2. Identify yourself
       For example say, "This is Jones," "Order Department-Miss Johnson"- or "Dunlop & Grant, Mr. Grant" Avoid the time wasting, out of date "hello".
    3. Remember to speak distinctly
    4. Be friendly
    5. Keep your promises
    6. Let the caller hang up first
    7. Going out?
       Don't forget to leave word. Tell the person who'll answer your phone where you can be reached and when you will be back.

4. Here's the "inside" on placing outside calls
    1. Before calling-Stop! Look! Listen!
    2. Be sure of the number
    3. Allow time to answer
    4. Stay on the line until your party answers
    5. Numbers are important too-when you call Long Distance

5. When answering calls for others. . .
    1. Emphasize the names
    2. Be helpful
    3. Be tactful
    4. Keep paper and pencil handy

REVIEW ON USE OF THE TELEPHONE

1. Why is it that few people will ignore the telephone, when they will throw away sales letters or refuse to see callers?
2. You are waiting on a customer and another employee tells you that you are wanted on the telephone. What should you do?
3. What is the best time of day to telephone the following persons?
    1. Farmer
    2. Manual worker
    3. Store owner
    4. Clerk in a store
4. What additional items could you suggest for the customer to purchase when receiving a telephone order for the following:
    1. Seed corn
    2. Lawn seed
    3. Rose bushes
    4. Fertilizer
    5. Injectable drugs
    6. Block of salt
5. You want to call on a customer, what could you do?
6. A regular customer has not been in for a few weeks, what could you do?
7. Your store has a customer that has 200 head of hogs on feed and he has not been in the store or ordered feed for over a week and the last order was for 4,000 pounds. What should you do?
8. Give the details of a telephone conversation that you have heard where the caller gave a bad impression.
9. What is wrong with the following opening statements on the telephone?
    1. Hello
    2. Jones Feed Mill
    3. What do you want
    4. He ain't here
    5. No, we don't sell that
10. Tell what you would say to the customer in question #7.
11. Tell what you would do in question #6.
12. You discover a mistake in an order after customer has left, what should you do?
13. Early in the morning you are asked to make a delivery of feed and the customer will not be at home after noon. You can't be there until the next morning. What would you do?
14. You have just received an order for 1,000 pounds of feed, two mineral blocks, one protein block, and two gallons of spray. What should you do?

15. The customer is talking so fast that you can't understand what he is saying. What should you do?

16. Which of the following sounds the best to a calling customer? (The word in capitals should be stressed and with emphasis.)

    1. MAY i help you?
    2. May I help YOU?
    3. May i HELP you?
    4. May i help YOU?

17. If you talk with a customer several times and have not met him, do you form a mental picture of how he looks? Does he of you?

18. If your telephone has a hold button and you have to be away from the telephone, should you use it? Why?

19. How could you develop a customer list for telephoning new customers?

20. Is it harder to sell over the telephone than in person? Why?

TEN CHARACTERISTICS OF GOOD TELEPHONE USAGE

1. Keep your telephone "covered" at all times

2. Plan each call

3. Dial carefully

4. Answer promptly

5. Identify yourself calling or answering

6. Speak clearly

7. Make definite requests; give definite answers

8. Explain delays; keep them short

9. Keep standard form handy; use it

10. Say "good-bye" and hang up gently

USE OF SCALES AND PACKAGING

1. Types of scales used in most agricultural businesses:

    1. Fan (over and under)
    2. Roller (cylinder)
    3. Hanging
    4. Platform

2. The purpose of scales is to insure that the customer gets a full measure of product purchased.

3. When using scales to weigh a purchase, you should always allow customers to watch and read scales if they desire.

4. When weighing materials it is always better to add materials to get the correct weight rather than take away materials.

5. Never dump material on scale because this will cause scales to roll and time is lost waiting for them to stop, time you could have used to wrap package or add more materials.

6. Loose materials should always be weighed on fan scales using a pan. Roller-type scales should not be used for weighing loose materials.

7. If you are using a fan-type scale, with pan, and the face shows only 2 or 3 or 5 pounds, this weight can be increased with the addition of various size weights.

8. Scale weights will have on the bottom or top a number indicating their weight. Adding this weight number to the reading on the scale equals total weight.

    Example: Scale face shows only 2 lbs. -- you need to weigh a 5 lb. purchase. Solution: A. Add a 3 lb. weight and bring hand over to the 2. B. Add a 5 lb. weight and bring hand up to 0.

9. Roller-type scales which compute are very good, for they determine weight and cost. They are good to use when a customer wants an amount determined by cost.

10. In order to read the roller computing-scale indicator you must first know the unit price of the article being weighed. The unit prices are shown in cents per pound. Example: Onion sets are being sold at 20¢ a pound. The customer wants 2 lbs. of sets; therefore, 2 lbs. of sets are weighed on the scales. Now by using the scale marked at 20¢ and reading up, the figure that intersects the reading line is 40¢. This means that 2 lbs. of sets at 20¢ per lb. will cost 40¢.

    Example: Hog wormer which sells for 5 1/2¢ per pound. The wormer weighs 5 1/4 lbs. Using the scale marked at 5 1/2¢ and reading up, the figure nearest the intersecting line is 29¢. The cost of the wormer is 29¢.

    See diagram on page 107.

					31		
Reading line	22	24	27	29	32	33	5 1/4
							5 1/2
Price per lb.	4 1/6	4 1/2	5	5 1/2	6	6 1/4	Weight in lbs.

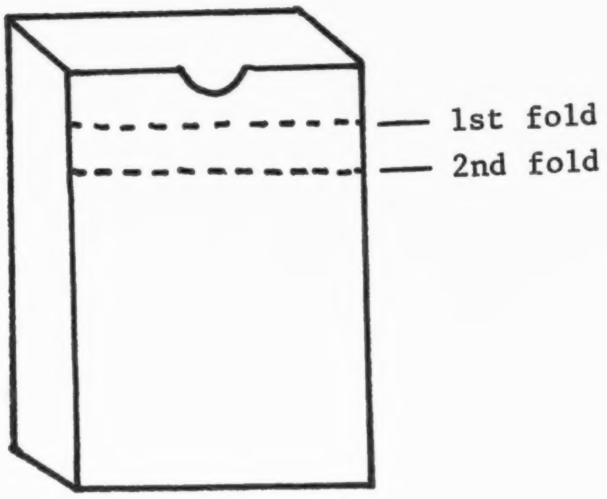
Section of Horizontal Indicator of a Roller Computing Scale

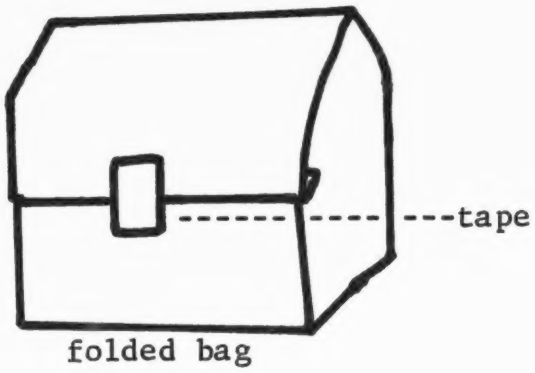
11. Never fill a bag over 2/3 full. This will leave sufficient room for a double fold and to secure.

12. To properly fold a bag you should:

    1. Settle material in bag
    2. Straighten out creases or folds
    3. Fold numbered side down once, then second time, and then fold the folds over onto sack and tape or tie with string

See Diagrams:





NEVER TWIST BAG AT TOP AND TIE BECAUSE YOU CAN TEAR IT AND IF BAG IS TOO FULL YOUR STRING WILL WORK OFF.

13. A double bag should be used for spices, pepper, sage, etc. Also, use double bag when 5 pounds or more of lawn, field, or garden seed are purchased.

14. Always put any seed you have left over in scoop back into proper bin or bag. This keeps seed from becoming mixed, saves time and eliminates confusion.

15. Always write purchase, pole beans, peas, etc., on bottom of bag before you put materials in bag. This will eliminate punching holes in sack and also customer knows what is in each container.

16. Label bag before you place materials on scales. This keeps scales from becoming tied up and prevents errors.

17. When two or more varieties of seed are weighed and packaged, always put the packages in a larger bag. On the outside of the larger bag put cost of each item and total, so that it will not be necessary to remove each item at the check out counter.

18. Bag Size -- "Rule of Thumb"

Grass seed -- Always double the bag size according to the amount of order

5 lbs. of grass seed - use a #10 bag
10 lbs. of grass seed - use a #20 bag

Corn-Beans - Use 1 size larger bag than amount of order

1 lb. corn or beans - use #2 bag
2 lbs. corn or beans - use #3 bag
5 lbs. corn or beans - use #6 bag

SCALES AND PACKAGING EXERCISE #1

	Weigh this Amount	Calculate Cost at _____ per _____	Bag Size	Calculate Cost at _____ per _____
1. _____	2 oz.			
2. _____	21 oz.			
3. _____	2 1/2 lb.			
4. _____	1/4 oz.			
5. _____	6 oz.			
6. _____	4 lb.			
7. _____	32 oz.			
8. _____	16 oz.			
9. _____				
10. _____				
11. _____				
12. _____				
13. _____				
14. _____				
15. _____				

Figure here:

SCALE AND PACKAGING EXERCISE #2

Price	Customer Order	Figure weight of purchase (Show figures-circle answer)	Bag Size
60¢ per lb.	20¢ worth		
40¢ per oz.	15¢ worth		
75¢ per lb.	25¢ worth		
$1.10 per lb.	60¢ worth		
39¢ per lb.	20¢ worth		
69¢ per oz.	10¢ worth		
25¢ per lb.	$1.10 worth		
79¢ per oz.	25¢ worth		
80¢ per lb.	50¢ worth		
$4.10 per oz.	75¢ worth		

SAFEGUARDS IN HANDLING MONEY

1. Don't run out of change
2. Make change with fewest pieces of money possible
3. Do not "bunch" sales
4. Keep your cash drawer closed when it is not in use
5. Correct an "over-ring" or an "under-ring"
6. Handle paper money with care
7. Count change carefully
8. Protect yourself from short-change artists
9. Recognize "bad" money
10. Learn store's specific policies regarding handling money
11. Follow store's policy on cashing checks
12. Always take care of the other persons money as it if were your own -- better to be safe than sorry

TIPS ON MAKING CHANGE

1. Mention total amount of sale and amount of money received from customer
2. Place the customer's money on the register change plate
3. Record the sale on the cash register
4. Count change carefully
5. Deliver change, receipt or sales-slip, and merchandise to customer
6. Thank the customer

To avoid trouble and unnecessary work, follow this rule whenever practical: "Register First--Wrap Afterwards."

EXERCISE IN MAKING CHANGE

Complete the following problems by making change according to the addition method. In adding, begin with the coins of smaller denomination.

Money Tendered	Total Purchase	Change in Coins					Change in Bills					Total Change
		1¢	5¢	10¢	25¢	50¢	$1	$2	$5	$10	$20	
$ 2.00	$ .61	4		1	1		1					$1.39
10.00	5.22											
20.00	1.64											
2.01	.26											
10.00	8.77											
1.00	.39											
1.50	1.13											
2.00	.77											
7.75	7.52											
2.00	1.04											
5.00	3.82											
50.00	23.45											
.52*	.42											
20.00	6.05											
5.00	.23											
2.00	.34											
1.00	.12											
10.00	8.35											
4.50	4.11											

*When the customer tenders extra pennies with his payment, he usually is trying to avoid getting odd pennies in his change. Deduct the pennies from the purchase price and return the difference by the addition method, disregarding the odd pennies in the money tendered.

ALL-STOCK SUPPLY COMPANY
Louisville, Kentucky

______________ 19 ___

Sold to ____

Address ____

Quantity	Description	Price Each		Total Amount	
	TOTAL				

SALES TICKETS - EXERCISE IN ADDITION

1.	$7.49	$1.43	$2.41	$1.99	$2.19
	.10	.27	.73	.08	1.08
	.11	.33	.07	.77	.65
	1.05	.09	.91	1.19	.49
	.15	.07	.09	.59	.21
	.85	.23	.28	.21	1.12
2.	$3.91	$ .89	$ .21	$3.19	$14.04
	.19	11.16	.74	.09	1.10
	.83	.04	.11	.45	7.06
	.43	.45	.44	.17	.11
	.17	.19	.16	.19	.13
	.16	1.07	.18	.91	.61
	.21	.33	.29	.89	.39
	1.04	.70	1.42	.06	.41
	.73	.14	.71	1.16	.10
3.	$ .16	$ .44	$ .19	$11.04	$17.78
	1.11	1.14	.10	.27	.45
	.34	.32	.21	.26	.23
	.39	.16	.44	.44	.39
	.19	.71	1.04	.91	.35
	.41	.14	.22	11.44	.17
	.44	.33	.17	.17	1.09
	.59	.69	.77	.98	.98
4.	$1.16	$7.08	$ .45	$ .56	$1.15
	.14	.34	.72	.72	.15
	.11	.25	1.09	.27	.73
	.71	.16	.23	.11	.37
	.92	.44	.18	.19	1.17
5.	$8.08	$9.19	$1.51	$7.01	$1.37
	.73	.28	.09	.11	1.01
	.16	.25	.78	.25	.12
	.47	.50	.45	1.50	.17
	.10	.17	1.25	.64	.34

SALES TICKETS - EXERCISE IN MULTIPLICATION

1. 32 x 5 =
2. 34 x 15 =
3. 37 x 25 =
4. 44 x 5 =
5. 56 x 15 =
6. 62 x 25 =
7. 73 x 5 =
8. 84 x 15 =
9. 92 x 25 =
10. 16 x 25 =
11. 17 x 15 =
12. 18 x 5 =
13. 19 x 5 =
14. 19 x 15 =
15. 19 x 25 =
16. 102 x 5 =
17. 103 x 15 =
18. 104 x 25 =
19. 105 x 5 =
20. 105 x 15 =
21. 105 x 25 =
22. 111 x 5 =
23. 112 x 15 =
24. 113 x 25 =
25. 114 x 25 =
26. 116 x 25 =
27. 121 x 25 =
28. 132 x 25 =
29. 142 x 25 =
30. 157 x 25 =
31. 164 x 25 =
32. 176 x 25 =
33. 186 x 25 =
34. 198 x 25 =
35. 198 x 5 =
36. 112 x 150 =
37. 114 x 150 =
38. 116 x 150 =
39. 119 x 150 =
40. 122 x 150 =
41. 142 x 150 =
42. 132 x 150 =
43. 154 x 150 =
44. 164 x 150 =
45. 172 x 150 =
46. 184 x 150 =
47. 192 x 150 =
48. 206 x 150 =
49. 225 x 150 =
50. 905 x 150 =

SALES TICKETS - EXERCISE IN ADDITION

Example: Beginning with 5, add 6's up to 65
Thus: 5-11-17-23-29-35-41-47-53-59-65

1. Beginning with 7, add 8's up to 87.
2. Beginning with 9, add 5's up to 59.
3. Beginning with 6, add 9's up to 96.
4. Beginning with 7, add 4's up to 47.
5. Beginning with 4, add 3's up to 34.
6. Beginning with 1, add 7's up to 71.
7. Beginning with 6, add 8's up to 86.
8. Beginning with 5, add 9's up to 95.
9. Beginning with 6, add 7's up to 76.
10. Beginning with 4, add 6's up to 64.

SALES TICKETS - EXERCISE IN CALCULATING EQUIVALENT DISCOUNTS

1. 20% and 10% =

2. 50% " 20% =

3. 40% " 40% =

4. 60% " 40% =

5. 50% " 10% =

6. 25% " 10% =

7. 15% " 10% =

8. 25% " 20% =

9. 20% " 5% =

10. 30% " 25% =

11. 10%, 10%, and 5% =

12. 20%, 10%, " 5% =

13. 50%, 50%, " 10% =

14. 40%, 10%, " 10% =

15. 20%, 20%, " 10% =

16. 20%, 20%, " 10% =

17. 40%, 10%, " 5% =

18. 60%, 20%, " 10% =

19. 10%, 5%, " 5% =

20. 35%, 20%, " 10% =

SALES TICKET EXERCISE

Filling Out Sales Ticket

Fill out a sales ticket on each of the following orders.

1. J. B. Stone, Route 1, Smithland, Kentucky, purchased the following supplies.

    25 lbs., Ky. 31 fescue @ 17¢ per lb.
    20 lbs., Pontiac potatoes @ $12.00 per cwt.
    200 lbs., 10-10-10 fertilizer, @ $54.00 per ton

    (These supplies were charged.)

2. Mrs. John Bell, 1873 Rose, Symsonia, Kentucky, purchased the following supplies.

    1 box of bird seed @ $1.60 per box
    10 lbs. lawn seed @ 30¢ per lb.
    3 rose bushes @ $1.30 each

    (These supplies were paid for by check and a 2% discount was given.)

3. Riley's Farm Service Store, Reidland, Kentucky, purchased the following:

12 bales	Michigan peat @ $2.00 per bale
3 tons	4-12-8 @ $62.00 per ton
45 gallons	Sure-Kil fly spray @ 90¢ per gal.
6 bushels	Sugar Cane corn @ $4.20 per bu.
100 pounds	Ky. Wonder pole beans @ 28¢ per lb.
1	5 Gallon Hudson Sprayer @ $4.60 per sprayer

(A 20% discount was given on all merchandise except spray materials and equipment, these received 30%. Cash was paid for this order and a 2% discount was given.)

4. Jones Grocery, Paducah, Kentucky, called for the following order to be delivered.

50 (25 per bundle) bundles	Early Jersey Wakefield cabbage plants @ $ .75 per bundle
200 plants	Ponderosa tomato plants @ $ .02 per plant
75 plants	Tasty Hybrid pepper plants @ $ .02 per plant
8 cases (24 per case)	Methyl Bromide @ $13.50 per case
1000 lbs.	6-12-12 fertilizer @ $64.00 per ton
100 lbs.	Fordhook Wonder green peas @ $ .45 per lb.
100 lbs.	Top Crop bush beans @ $ .45 per lb.

(A 20% discount was given on the first $25.00 and 30% thereafter.)

MERCHANDISING AGRICULTURAL PRODUCTS

General information on merchandising:

1. People sell people
2. Merchandise must be:
    a. Properly priced
    b. Properly displayed
3. People remember:
    a. 10% of what they read
    b. 90% of what they see
4. Bargain counter
    a. Place odds and ends on these tables
    b. Damaged goods
    c. Old stock
    d. Slow moving items
5. Merchandise items so they can be seen
6. Change displays when they become inadequate (This is the only reason for changing a display)
7. When merchandising, show the various uses; people use items for various reasons or purposes
8. Placement on shelves
    a. Light items on top
    b. Heavy items on bottom
    c. Keep common items together
    d. Place harmful items out of the reach of children
9. Placing items on display
    a. Keep prices up to date
        1. Don't over charge
        2. Don't under charge
        3. Saves time and energy
    b. Saves customers from looking for clerk
    c. Never place items on shelves unless they are priced--clearly and correctly
10. Placing stock on floor---no, no, because:
    a. Get dirty on the floor
    b. Become damaged--break items open

    c. Customers want to bargain for dirty materials -- they think they are old or used
    d. Get wet when cleaning floor
    e. Helps keep aisles clear, clean, open, safe to walk and stock

11. Displays should always be up to date, seasonable, pushing special items at all times.

12. Use headers--proper use will help customers locate stock--large cards telling where goods are located and what is in the area.

13. Always place new items where they can be seen, place in front of store. If people don't know you have an item, you can't sell it, and they will will go somewhere else.

14. A large part of buying is impulsive--people see an item and they purchase it--so place specials and new items where they can be seen.

15. If a customer ever tells you they didn't know you sold an item, you have done a poor job of merchandising.

16. Good selling items should be placed in the rear of the store so people will have to go to back to buy.

17. You only sell what people can-------see.

18. Use seasonal displays.

19. Keep posters and displays and calendars up to date and remove old, worn, and out-of-date material from walls.

20. Keep it clean------keep materials clean.

Cardinal Rules of Merchandising

1. Keep it clean
2. Keep it priced
3. Keep it seasonal
4. Keep new items up front
5. Keep it off of the floor

OBSERVATIONS IN MERCHANDISING IN AN AGRICULTURAL BUSINESS

(Worksheet for Field Trip)

Name of store ______________________

Evaluated by ______________________

Date ______________________

The following correct practices were observed:

1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________
8. ______________________
9. ______________________
10. ______________________

The following errors were observed:

1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________
8. ______________________
9. ______________________

MERCHANDISING

PRACTICE EXERCISE IN DISPLAYING

Item ______________________

Location

Type Display

Amount to Display

Type of Item

Why

Item ______________________

Location

Type Display

Amount to Display

Type of Item

Why

Item ______________________

Location

Type Display

Amount to Display

Type of Item

Why

Item ______________________

Location

Type Display

Amount to Display

Type of Item

Why

Name ______________________________

MERCHANDISING - EXERCISE IN MATHEMATICS

1. For how much must a merchant sell goods costing:
    a. $510 to gain 25% on sale?
    b. $644 to gain 12 1/2% on sale?
    c. $816 to lose 2% on sale?
    d. $2,110 to lose 5 1/2% on sale?

2. What is the rate of gain or loss on sale when goods costing
    a. $840 are sold for $1,260?
    b. $525 are sold for $840?
    c. $765 are sold for $750?
    d. $378 are sold for $360?

3. What was the cost of merchandise if, by selling for
    a. $2,350, a gain of 20% is made?
    b. $5,376, a gain of 33 1/3% is made?
    c. $7,175, a loss of 4 1/2% is suffered?
    d. $3,490, a loss of 7% is suffered?

4. How much profit will be made on the following items:
    a. 79¢ at 10% markup?
    b. 49¢ at 25% markup?
    c. 84¢ at 33 1/3% markup?
    d. 98¢ at 12 1/2% markup?
    e. 87¢ at 50% markup?
    f. 32¢ at 75% markup?
    g. 8¢ at 80% markup?
    h. 65¢ at 55% markup?

7

MERCHANDISING - EXERCISE IN MATHEMATICS

Example:

Find the selling price (retail) of an article that cost $4.50 if the markup based on cost is 33 1/3%.

Solution: 33 1/3% = 1/3
1/3 of $4.50 = $1.50

$4.50 Cost
1.50 Markup
$6.00 Retail selling price

1. Cost - $49.00
Markup on cost - 28 4/5%
Retail ____________

2. Cost - $15.40
Markup on cost - 14 2/7%
Retail ____________

3. Cost - $896.00
Markup on cost - 12 1/2%
Retail ____________

4. Cost - $1,042.00
Markup on cost - 40%
Retail ____________

5. Cost - $656.40
Markup on cost - 25%
Retail ____________

6. Cost - $148.00
Markup on cost - 33 1/3%
Retail ____________

7. Cost - $667.21
Markup on cost - 30%
Retail ____________

8. Cost - $24.72 per case
(24 items per case)
Markup on cost - 40%
Retail per item ____________

9. Cost - $43.40 per ton
Markup on cost - 21%
Retail per 100 pounds _______

10. Cost - 23¢
Markup on cost - 43%
Retail ____________

GENERAL INFORMATION ON DISPLAYS

1. A display of merchandise can aid in each of the steps of a sale by:

    a. Making contacts with customers -- gaining their attention
    b. Creating interest and desire by presenting the merchandise for the consideration of the customer
    c. Being a form of "suggestive selling" that may result in the customer's buying related goods
    d. Performing the entire selling process, resulting in the customer deciding to buy an article without the assistance of a salesperson

2. Generally, the following merchandise should be featured in displays:

    a. Merchandise that is purchased mainly on impulse rather than after careful calculations
    b. Related merchandise as a suggestion to customers making purchases
    c. Slow-moving merchandise of which the merchant is over-stocked
    d. Merchandise with extra high profit margin
    e. Merchandise with special appeal because of its novelty, style or price

3. The three major types of merchandise displays are:

    a. Window display
    b. Interior display
    c. Package display

4. The five different types of interior merchandise displays are:

a. Open display.	the placing of goods on a counter or on open racks so that the customer can handle the merchandise
b. Closed display:	the placing of goods in showcases, wallcases, or windows facing the inside of the store or showroom so that customers cannot handle the goods -- usually used for high value or easily broken items
c. Platform display:	the placing of goods on a raised platform located near elevators and entrances to departments
d. Ledge and wall display: .	the placing of goods -- often on pegboards with punched-out holes for hooks -- so as to utilize space on walls and ledges
e. Architectural display:. .	the use of model buildings, rooms and etc. where goods are shown in their normal setting or surrounding

5. Attention may be attracted to a merchandise display by:

    a. Location

    b. Size
    c. Bright lighting
    d. Color
    e. Motion
    f. Balance and emphasis
    g. Noise
    h. Odor

6. The merchandise display may consist of the following:

    a. Mass displays of a single article
    b. A single article alone
    c. A line of merchandise
    d. An ensemble
    e. Production processes
    f. Unrelated goods

7. Some pointers on displays:

    a. Place the displays at strategic points: near the entrance, near the cash register, along lines of traffic within the store and at the point where related merchandise is sold.
    b. Customers appreciate the opportunity to see, handle, and make their own selection of merchandise. Make it possible for them to do so by using open displays when the goods will not suffer damage from handling.
    c. Tie in your interior display with your window display and with the manufacturer's advertising in magazines, newspapers, radio, and television.
    d. People generally do not like to ask the price of items. Keep everything clearly and neatly price-marked.
    e. Be sure that the display is not cluttered up by showing too many articles. The best plan is to show a supply of only one item on a table or stand. If two or three related items are shown, they should be separated by a space or a partition.
    f. When self-service is used, be sure that the displays are not too symmetrical or perfect. Customers hesitate to break into a display that is perfectly formed and balanced.
    g. Key the display to seasons, the weather and special holidays.
    h. Generally speaking, displays should lend themselves to a variety of merchandise from which, in many cases, self selection may be made.

UNIT: SALESMANSHIP -- SELLING

Number of class periods ________________ Month(s) ____________________

Major objective to be attained through the unit: To develop the effective ability to sell agricultural supplies and services based on the needs of customers.

Learnings Needed to Reach the Major Objective

(Modify these learnings to make them fit the needs of your students. In most cases, the teacher will need to secure all of these learnings if he is to prepare the students for successful employment in agricultural-supply businesses that sell production supplies and services to farmers and others.)

1. To understand that selling is the key function of all business activity since it involves assisting and helping people to buy what they need

    a. What is selling?
    b. Selling involves more than retail salespersons
    c. What is good selling?
    d. Selling and personal salesmanship
    e. Five basic buying decisions

        -- A need
        -- The thing
        -- The source
        -- The price
        -- The time

    f. Help the customer buy

        -- Know your customer's needs
        -- Present the merchandise or service to meet the need

    g. Develop the YOU attitude

2. To develop an understanding of the fact that all people must sell something most of the time, no matter what they do in life

    a. Types of selling

        -- Intangibles
        -- Tangibles
        -- Skilled workers sell
        -- Students sell

    b. Selling is essential in modern specialization

        -- Determine what the approximate market is for your product
        -- Procure the goods and provide the exact kind of service desired
        -- Convince the customer that the product or service is what he needs

   c. Basic marketing function

      -- Merchandising
      -- Buying
      -- Selling

   d. Basic selling functions

3. To develop the attributes of a good salesperson

   a. The seller's personality

      -- Physical characteristics
      -- Mental characteristics

   b. The seller's use of English
   c. The seller's use of arithmetic
   d. Personal habits and integrity
   e. Initiative and self reliance

4. To familiarize the student with the differences among customers

   a. Buying motives
   b. Buying decisions
   c. The nature of sales resistance
   d. Handling the customer's objections
   e. Handling excuses and delays

5. To create the image of making the customer the most important person in retail selling

   a. Obligation to the customer
   b. Knowledge of merchandise
   c. Steps in selling
   d. Sales demonstrations

6. To understand the parts of the sale

   a. Pre-approach and approvals
   b. Determining needs and wants

      -- What does the customer want?
      -- How does he want to be treated?

   c. Presenting the merchandise
   d. How to meet objections
   e. Closing the sale
   f. Suggestive selling
   g. Creating good will

7. To understand the types of customers

   a. How customers differ (buying motives)

b. How to handle individual problems

    - Talkative customer
    - Tired customer
    - Irritable customer
    - Customer not clear on his needs

8. To conduct sales demonstrations and rehearsals

    a. To help students overcome fear
    b. To help students develop self confidence
    c. To emphasize and explain the product
    d. To emphasize the parts of a sale
    e. To practice dealing with different types of customers
    f. Role playing

9. To understand obligations to customers

    a. Honesty
    b. Genuine desire to be of service to the customer
    c. To sell the customer what he needs -- not just to sell
    d. Good service -- after the sale is made
    e. Good housekeeping -- clean and straight stock

10. To understand the importance of constantly improving sales techniques through study and by supervision

    a. Modern techniques for better selling
    b. Can we learn how to sell?

        - Study
        - Training
        - Experience
        - Make good use of supervision

11. To develop pleasant speech and correct use of English

    a. The effect of pleasant speech versus unpleasant speech on the customer
    b. The importance of correct use of English
    c. Use tape recorder to discover and correct errors

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

Employees in agricultural businesses who come in daily contact with customers must be skilled in working with them. The reputation of the business is built upon satisfied customers. Satisfied customers are those who were sold goods and services which were based on needs. Sales personnel in agricultural-supply businesses must have as their primary concern selling the customer what he really needs. One of the main jobs of the sales personnel in agricultural business today is to help the customer decide just what his need is.

The student should understand from the beginning that selling involves people and although people differ in many respects, they are alike in wanting attention, respect, and courteous service. They should understand that the image of the salesman today is far different than that of yesterday. A loud voice and glib tongue will no longer satisfy the customer. The customer of today has a wide variety of products to choose from and many stores from which to purchase. They will "trade" where they are treated courteously and fairly.

Students should also understand that to ask a question or to seek directions from an employer is not an indication of incompetence but rather an interest and desire to do a good job. It is better to ask than to sell a customer the wrong product.

The approach, the conversation, and making the customer feel important are skills which make for successful employment in any agricultural business. The learnings in this unit apply not only in agricultural businesses but all types of business where selling is done.

This unit should be a very stimulating unit for both the students and the teacher. If possible, the unit should be taught as the students approach the time they will be starting their supervised occupational experience.

Student Goals

All students in the class studying salesmanship and selling should set for themselves goals to be good salesmen and to render efficient and courteous service to customers. The goal should be to sell the customer the supplies and services he needs, not just to sell.

Providing the Class Instruction

The following lessons are suggested for use in dealing with the unit on salesmanship -- selling. The teacher may want to delete some of the problems or add others that will help him secure the learnings in this unit.

1. What is the key function of all business activity?
2. How important is selling in a modern society such as ours?
3. What are the types of selling?
4. What are the attributes of a good salesperson?
5. How do customers differ?
6. How work with each kind of customer?
7. What are the parts of a sale?
8. What are the different types of customers?
9. What is the place for sales demonstrations?
10. What are our obligations to customers?
11. How can we constantly improve our sales techniques?
12. How important is it for us to use pleasant speech and correct English in communicating with customers?

Teaching Suggestions

It is suggested that the teacher spend one or two class periods discussing salesmanship and the characteristics of a good salesman. The duties of students and the problems they are likely to encounter in their centers should be discussed. Making clear to students their duties and responsibilities should serve as a stimulus for class discussions.

Once students understand the parts of a sale , in learning six, a series of questions similar to these should be carefully discussed coming out with clear answers:

-- How approach the customer?
-- How gain the attention of the customer?
-- How secure the interest of the customer?
-- How create desire on the part of the customer?
-- How overcome customer objections?
-- How overcome customer sales resistance?
-- How close the sale?
-- How evaluate the sale?

Much use should be made of demonstrations and role playing when getting answers to the above questions.

Before students start their demonstrations and role playing they should understand:

a. Mistakes made in classroom can be corrected, thus preventing many errors from occurring in the center.
b. Their performance will be evaluated so as to secure maximum benefit from the demonstrations and role playing.
c. These evaluations must be serious and constructive if they are to be worthwhile. A chart may be used to keep a record of students' progress.

The teacher should demonstrate the various abilities and allow discussion before the students practice. The teacher should not "rush through" his attempt at developing these abilities -- it will take time to develop them. Each student should have an opportunity to practice before the class. Recording students' performances will provide a basis for evaluation and help. To assist in role playing, the student acting as the customer should confine his needs and purchases to items located in the classroom. The real teaching and learning in this unit depends upon the participation (practice) of the students. Students will gain confidence and poise in the classroom by acting out realistic situations.

Pages 134-42, dealing with "parts of a sale," may be used to help develop the ability to make sales. Before "a part" of the sale is covered in class the proper sheet may be mimeographed and given to each student. At the end of the period of instructions the teacher can instruct the students to fill it out and bring back to class the next day. The next day when the class concludes on the correct, a clean sheet should be supplied each student for writing in the correct answers. The class should now practice the ability concluded upon. Page 141 should be used by students to evaluate classmates. Page 142 should be used for self-evaluation. This may be done while listening to a replay of performance. Each of these abilities should be practiced step by step and then practice the whole sequence together.

A good teaching aid is to take a field trip to a local business and let the student wait on the store manager and have him evaluate the students. Employers may be invited to class to participate.

Student Participation

Have students practice each part of a sale separately and the complete sequence in making a sale in the classroom.

Have students strive to improve their speech and use of English.

Have students constantly evaluate their sales techniques, speech, and use of English.

Getting Decisions Made and Carried Out

Students should be guided to arrive at clear-cut conclusions to each problem in this unit. Each conclusion should be followed by supervised practice in the classroom. And, this practice followed by correct practice in the agricultural businesses. Teacher supervision should do much to help the students develop their abilities in salesmanship and service.

References

Books

Fundamentals of Selling; Seventh Edition, Wingate and Nolan, (South-Western Publishing Co., Cincinnati -- 1959.)

*Store Salesmanship; Fourth Edition, Robinson and Blackler (Prentice-Hall, Inc., New York -- 1954.)

REFERENCES ACCORDING TO LEARNINGS

1. To understand that selling is the key function of all business activity	Fundamentals of Selling, pp. 1-10
2. To develop an understanding of the fact that we all must sell something most of the time, no matter what we do in life	Fundamentals of Selling, pp. 11-18
3. To develop the attributes of a good salesperson	Fundamentals of Selling, pp. 169-83 188-207, 235-52

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*Teacher reference

4. To familiarize the student with the differences among customers	Fundamentals of Selling, pp. 67-84
5. To create the image of making the customer the most important person in retail selling	Fundamentals of Selling, pp. 93-97 100-15
6. To understand the parts of a sale	Fundamentals of Selling, pp. 277-95 300-15, 321-38, 346-64, 373-89, 397-413 Information Sheets Dealing With Parts of a Sale, pp. 132-40 Evaluating a Sales Demonstration, pp. 141-2
7. To understand the types of customers	Fundamentals of Selling, pp. 324-38
8. To conduct student sales demonstrations and rehearsals	Fundamentals of Selling, pp. 351-57 Demonstrations and rehearsals
9. To understand obligations to customers	Fundamentals of Selling, pp. 8, 79, 134-35 *Store Salesmanship, pp. 30, 33, 77, 188-89, 217-25
10. To understand the importance of constantly improving sales techniques through study and by supervision	Fundamentals of Selling, pp. 18-21 412-13
11. To develop pleasant speech and correct use of English	Fundamentals of Selling, pp. 180-81, 182, 216-29

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*Teacher reference

"THE APPROACH" -- A PART OF A SALE

There are various ways of beginning a sale. Many times a transaction will start immediately, without any formal approach. Often, the approach will consist only of an introductory phrase, used as a salutation. The initial approach should come from the salesperson. The manner of the approach is more important sometimes than the words themselves, but in either case, it should be sincere.

INSTRUCTIONS: Place an "X" before the statements that you think are good; a "P" before those you think are poor; a "Q" before those you think are questionable.

_____ 1. Are you looking for something?
_____ 2. Is anyone helping you?
_____ 3. Good morning, Mrs. Jones, may I help you?
_____ 4. Are you being taken care of?
_____ 5. May I show you something?
_____ 6. May I help you?
_____ 7. Something for you?
_____ 8. Anything in particular you want?
_____ 9. Now, dearie, what may I do for you?
_____ 10. Are you next, lady?
_____ 11. Do you wish attention?
_____ 12. Something in the chemical line?
_____ 13. What do you want?
_____ 14. One fifty?
_____ 15. Yes, Ma'am?
_____ 16. Are you looking or do you wish to buy something?
_____ 17. Can I tempt you with anything today?
_____ 18. Good morning?
_____ 19. This is a dandy value.
_____ 20. Is someone waiting on you?

Respond to the remarks listed below which a customer might make to you.

1. I would like to get a good sprayer.

2. A lady says: "I would like to look at some irons."

3. I need a wormer.

4. A man and his son come in and the man says: "I want to see some overshoes."

5. Customer says: "I am just looking."

6. Do you have any seed?

7. Where are the rose sprays?

8. Can you charge purchases in this store?

"GAINING ATTENTION" -- A PART OF A SALE

By offering immediate service to the customer, you will gain his attention, which up to this time has been voluntary. The attention of the customer must then be directed toward some definite aspect of the merchandise in order to secure further interest, create a real desire, and result in a sale.

Indicate what you would say or do to gain attention in selling the merchandise listed below.

ARTICLE	WHAT WOULD YOU SAY?	WHAT WOULD YOU DO?
1. Garden tractor		
2. Sprayer		
3. Seed corn		
4. Spray materials		
5. House paint		
6. Rat poison (on bargain table)		
7. Fertilizer (special discount)		
8. Protein blocks		
9. ____________________		
10. ____________________		

"SECURING INTEREST" -- A PART OF A SALE

People do not usually become interested in certain merchandise until they have had their attention directed to it. You can arouse the customers interest by showing interest in the customer. Find out about those things in which he is already interested, then talk about them. A good demonstration of your product will arouse interest.

Indicate in detail what you would say and do to secure interest in selling the merchandise listed below.

ARTICLE	WHAT WOULD YOU SAY?	WHAT WOULD YOU DO?
1. Spray bomb for roses		
2. Weed bar		
3. Lawn fertilizer		
4. Spray that works on garden hose		
5. Rat poison		
6. Lawn chairs		
7. Garden tools		
8. Hog feeder		
9. ____________________		
10. ____________________		

"CREATING DESIRE" -- A PART OF A SALE

In order to create desire, it is necessary to enlarge and magnify the customer's interest. You must have faith in your product and instill the customer with the idea that this product will bring him more service and satisfaction than would any other article or similar product.

Indicate in detail what you would say and do to create desire in selling the merchandise listed.

ARTICLE	WHAT WOULD YOU SAY?	WHAT WOULD YOU DO?
1. Lawn mower		
2. Sprayer		
3. Seed corn		
4. Spray materials		
5. House paint		
6. Woven wire		
7. Aluminum gate		
8. Pig starter		

List below five statements which would create a desire for a given product:

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________

"MEETING OBJECTIONS" -- A PART OF A SALE

Every salesman will encounter customers who raise objections to buying a certain article. Some of the objections will be sincere, others will be mere excuses for not buying. The salesman just leads the way in showing his customer in a tactful way that his products are good.

Indicate the answer you would give to each of the apparent objections listed below.

1. The price is too high.
2. I must check on this first.
3. I'm in a hurry now, but I'll be back later.
4. I want to shop around some more before I buy.
5. I think I can do better somewhere else.
6. I left my pocketbook at home.
7. Is this as good as that one?
8. Are you sure this will work?
9. Mr. Jones has them a lot cheaper.
10. Doesn't this spray come in a quart can?
11. I am afraid this will not work.
12. Do you have any second hand sprayers?
13. No more than I plan to use this tool, a cheap one will do.
14. I've never heard of this brand.

"MEETING SALES RESISTANCE" -- A PART OF A SALE

Below is a list of sincere objections that a customer may give as a reason for not buying the merchandise. Answer each objection according to the method suggested:

1. Turning objections into selling points --

Customer: "This sprayer is just too large."

Answer:

2. Agreeing with the customer but presenting another angle --

Customer: "This mower can't go over rough ground."

Answer:

3. Requesting the customer to explain objection --

Customer: "This lawn mower is good, but, it would take a large lawn to make it practical."

Answer:

4. Admitting the objection and giving a superior point --

Customer: "This garden tractor is small."

Answer:

5. Asking a question that overcomes the objection --

Customer: "I do not believe these tractor tires have the quality of the ones I looked at down the street."

Answer:

"CLOSING SALE" -- A PART OF A SALE

The last step in a sale is the closing. After you have created in the customer a desire for the product, the closing should come smoothly and quickly. In a successful closing, you must suggest the action you want the customer to take by what you say and what you do.

Indicate what you would say and do to close the sale in selling the merchandise listed.

ARTICLE	WHAT WOULD YOU SAY?	WHAT WOULD YOU DO?
1. Garden sprayer		
2. Seed corn		
3. Pre-emergent spray		
4. House paint		
5. Fertilizer		
6. Lawn mower		
7. Termite control		
8. Dairy feed		

EVALUATING A SALES DEMONSTRATION

In this exercise each student should make a sales presentation, using another student as his "prospect." Use "G" to indicate good; "F" to indicate fair; "P" to indicate poor.

_____ 1. Does the salesman use a good approach?

_____ 2. Does he gain attention readily?

_____ 3. Is the customer questioned effectively as to desires or needs?

_____ 4. Does he give adequate information?

_____ 5. Does he use "because" phrases when giving merchandise information?

_____ 6. Is his demonstration clear and logical?

_____ 7. Does he induce prospect participation?

_____ 8. Does he answer all objections clearly?

_____ 9. Does he recognize when to stop showing merchandise?

_____ 10. Does he use definite methods of meeting objections?

_____ 11. Does he use definite closing methods?

_____ 12. Does he refrain from giving the price until he has created value?

_____ 13. Does he suggest additional or related merchandise?

_____ 14. Is his voice clear, pleasant, and forceful?

_____ 15. Does he know his merchandise thoroughly?

_____ 16. Does he effectively regain attention if it is lost?

_____ 17. Was his personal appearance all that it should have been?

_____ 18. Has he induced the customer to do much of the talking?

_____ 19. Does he exhibit a real desire to be of service?

_____ 20. Did he repeatedly say, "and--uh"?

_____ 21. Did he use good manners and English?

"WHAT WENT WRONG?" -- EVALUATING A SALE

Here are 18 questions one should ask himself after giving a sales demonstration or after attempting to make a sale. These questions should be most helpful in developing sales abilities.

1. What mistakes did I make in my greeting?
2. Did I have a warm and friendly smile?
3. Was I timid or overconfident in my approach?
4. Was my personal appearance all that it should have been?
5. Did I size up my customer correctly and show the right goods?
6. Did I use correct English, and was my language adapted to my prospect?
7. Was my talk coherent?
8. Did I talk too much?
9. Did I clinch each point in the presentation as I went along?
10. Did I allow myself to become nervous and thus detract from the effectiveness of my talk?
11. Did I overcome objections, or was I flustered when objections were raised?
12. In what way was my presentation effective, and in what way was it weak?
13. Was a question raised regarding my goods that I could not answer?
14. Was a question raised regarding my firm and its' policies that I could not answer?
15. Did I make the mistake of knocking my competitor or competing goods?
16. Was I discourteous at any time?
17. Did I argue?
18. Was I weak in my closing?

UNIT: FEEDS

Number of class periods ______________ Month(s) ________________________

Major objective to be attained through the unit: To develop the ability to make sales and render services in feeds effectively as a salesperson in an agricultural-supply store.

Learnings Needed to Reach the Objective

(The learnings may need to be changed to meet the needs of the particular group of students; some learnings may need to be deleted, others added.)

1. To understand the importance of an economical feeding program to success in livestock production
    a. The feed cost as a percentage of the total cost of livestock production
    b. The effect of the feeding program on the quality of products produced
    c. The effect of the feeding program on rate of livestock production
    d. The effect of the feeding program on efficiency factors
    e. The effect of the feeding program on health of livestock
    f. The effect of excessive feeding, under-feeding, feeding wrong ration, and other improper feeding practices on farmer's returns

2. To know the factors affecting the success of a feed dealer
    a. Location of the dealership
    b. Need for feed and services in the trade area
    c. Knowledge of feeds and feeding on the part of the manager and employees
    d. Quality and variety of feeds and services provided
    e. Price of products and services
    f. Reliability of dealer
    g. Public relation efforts of the dealer

3. To understand how farm animals use their feed
    a. Types of digestive systems of farm animals
    b. Digestibility of feeds
    c. Functions for which animals use feed
    d. Relationship of the nutrients in feed to the body functions of animals
    e. Important differences in plants and animals which affect livestock feeding
    f. Necessary processes in the use of feed by animals to sustain life and produce salable products

4. To know the feed ingredients and their characteristics
    a. Classification of feeds into: starchy or high energy

grains, proteinaceous feeds, fibrous feeds, minerals, vitamins, and feed additives
   b. Feed ingredients that are of greatest importance
   c. Important uses
   d. Physical and chemical characteristics of ingredients
   e. Nutritive contents
   f. Cost of ingredients

5. To relate animal needs to characteristics of feeds

   a. Primary need of specific groups of animals -- examples; large amount of high-energy low-cost feed for finishing steers; small amount of very high-quality supplement for baby pigs
   b. Identify characteristics of different classes of feed -- corn or sorghum; very high energy, palatable, and economical ingredients -- baby pig premix; high-quality animal source protein, mineral, vitamin, and antibiotic supplement

6. To know the milling processes

   a. Forms of ingredients -- whole grain, cracked, crushed, meal, etc.
   b. Methods of reducing particle sizes
   c. Ways of combining ingredients
   d. Final physical characteristics of feeds

7. To know how to supply feed to customers

   a. Anticipate and determine customers' needs -- amount of feed, kind of feed, and time it is needed
   b. Facilities the farmer has
   c. Efficient means of delivering feed

8. To understand the trends in merchandising feed

   a. Bulk handling procedures (conveyors -- screw, pneumatic, etc.)
   b. Mill to farm service or mill to automatic feeder
   c. Use of premixes
   d. Formulating rations using farmer-owned grains -- using portable mills or farm grain brought to mill
   e. Providing related services
   f. Increase in outside selling
   g. Contract feeding of various kinds of livestock
   h. Other new developments -- check with cooperating stores

9. To understand the feed regulatory program and the description of feeds

   a. Interpretation of feed tags
   b. Open and closed formula feeds
   c. Nutritive guarantees required on commercially prepared feeds
   d. Food and drug regulations

10. To understand the use of additives in feed

    a. Purpose for which used
    b. Classes of livestock to which they are important
    c. Methods of putting additives in feeds
    d. Feed regulations

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

The emphasis of this unit is on buying and selling feed and the economics of it rather than the nutritive aspects of feeding even though the latter is also of much significance. A good understanding of the principles and practices of feeding livestock is needed as a background for this unit. Since students in the program have been enrolled in vocational agriculture classes in previous years they should have acquired the necessary background. However, if they have not, time must be used to secure the necessary learnings.

> VERY IMPORTANT: If a review reveals that the students are lacking in this background, the teacher should select from high school Unit 35, Feeding Livestock, the more significant learnings and deal with them. (Learnings 1, 2, 3, 6, 7, and 8 are highly relevant.) If this special unit is used in classes where the students have not had the regular feeding unit, it should be dealt with first.

The teacher should now attempt to get understanding of the feed business. (Not that these are in conflict, rather the point of emphasis is different.) He should cause the students to understand that the feed business is a highly competitive one operating on a narrow margin of profit. The feeder and the dealer in feeds must be efficient and accurate.

Students should be reminded that farmers are good businessmen trying to meet consumer demands for a uniform supply of high quality meat, milk, and eggs at competitive prices and still have some income left. Unless farmers can do this they will not remain a customer of the feed store for long. Since feed makes up a high percent (from 50 to 80) of the livestock producers' total cost of production, it has a great bearing on whether or not he succeeds. Therefore, it is a challenge to distribute to farmers quality feed in a manner that will help them do the job efficiently and economically.

That farmers be supplied with feed is not enough to guarantee success. The agricultural-supply stores must be able to supply them in a manner which will meet the competition and leave the greatest margin of profit possible. Doing this in an industry that ranks in the top fifteen manufacturing industries in the country and is the largest one serving farmers, is difficult.

Student Goals

Since 50-80 percent of the total cost of producing livestock and livestock products is feed, students should set goals to sell farmers feed materials and services which will enable them to produce high-quality products efficiently with a reasonable margin of profit.

In setting out to deal with this unit, the teacher should cause each student to set goals similar to the following:

1. To understand the importance of an economical feeding program to success in livestock production
2. To know the factors affecting the success of a feed dealer
3. To understand how farm animals use their feed
4. To know the feed ingredients and their characteristics
5. To relate animal needs to characteristics of feeds
6. To know the milling process
7. To know how to supply feed to customers
8. To understand the trends in merchandising feed
9. To understand the feed regulatory program and the description of feeds
10. To understand the use of additives in feed

Providing the Class Instruction

The following lessons are suggested for use in dealing with the unit. The teacher should feel free to modify these by adding others, based on the learnings which the students already possess.

1. How important is an economical feeding program to success in livestock production?
2. What factors affect the success of a feed dealer?
3. How do farm animals use the nutrients in their feed?
4. What are the major feed ingredients and the characteristics of each?
5. Different animals need different feeds: What are the primary needs for the different groups of animals?
6. What are the features of the important milling processes?
7. How supply feeds to customers?
8. What are the trends in merchandising feeds?
9. How are feeds handled in bulk?
10. What are some of the feed contract programs and how do they work?
11. How are rations formulated on the farm using a portable mill?
12. What are some of the important related services of the feed business?
13. What are the important nutritive and drug regulations affecting feed manufacturers and dealers?
14. How interpret a feed tag?
15. How use feed additives in feeds?

Teaching Suggestions

The following teaching techniques and aids are suggested:

In learning #4 samples of feed should be available for the students to examine. Feed samples may be secured from local dealers and placed in small plastic bags.

In learning #6 samples of feed in different forms such as pellets, meal, cube, wafer, crumble, and grains that have been cracked, crimped, and rolled should be available for students to examine.

In learning #8 the services rendered by dealers in the community should be listed on the chalkboard. Discuss which are most used, the reasons for their use, and whether dealers should offer additional services.

In dealing with a part of learning #9 -- students should read and interpret feed tags. Tags can usually be secured from the local feed stores. For additional help, see RELATED MATERIALS: HOW TO UNDERSTAND A FEED TAG.

In dealing with a part of learning #9 -- a field trip to a local feed mill which manufactures and labels feeds should be helpful. Have the manager explain the process of registration, licensing, and labeling.

Students should learn the important definitions pertaining to feeds, see RELATED MATERIALS: SOME IMPORTANT TERMS USED IN THE FEED TRADE.

Student Participation

Students should practice in the classroom, making recommendations on:

-- Ingredients to use in formulating a ration
-- Amount (proportion) of each ingredient to include
-- Physical preparation of feed

Students should prepare a list of recommended rations for different classes of livestock. A list of the more common feeds and their characteristics such as protein, total digestible nutrients, and livestock they are best suited for should be prepared. These lists should be kept in the training centers for reference.

Getting Decisions Made and Carried Out

The teacher should guide the students to arrive at sound conclusions to the problems dealt with in this unit. Sound conclusions, with clear understandings, will do much to assure that students will be successful during their training period.

The teacher should observe the students and check with the employers when making supervisory visits to help insure that the students are developing the abilities needed to render service to customers and to be effective workers in the businesses.

References

Books

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The Handbook of Feedstuffs, Production, Medication, Formulation; Seiden and Pfander. (Springer Publishing Company, Inc., New York -- 1958.)

Animal Science and Industry; Acker. (Prentice-Hall, Inc., Englewood Cliffs, New Jersey -- 1963.)

Livestock and Poultry Production; Second Edition, Bundy and Diggins. (Prentice-Hall, Inc., Englewood Cliffs, New Jersey -- 1961.)

Raising Livestock; Second Edition, Deyoe, Ross, and Petters. (McGraw-Hill Publishing Company, Inc., New York, New York -- 1954.)

Feed Formulations Handbook; Perry. (The Interstate, Danville, Illinois -- 1966.)

Bulletins

Regulatory Bulletin 190, "Commercial Feeds in Kentucky," (University of Kentucky)

Units (Department of Agricultural Education, University of Kentucky)

HS 35 -- Feeding Livestock, 1963
HS 49 -- Feeding Dairy Cows, 1959
HS 40 -- Hog Production, 1961
HS 45 -- Beef Production, 1961

Movies

Feeding Farm Animals, (19 minutes -- available from Audio-Visual Aids, University of Kentucky, or from Motion Picture Service, Office of Information, USDA, Washington 25, D. C.) This film deals with the six basic feed nutrients and how animals use these nutrients.

Commercial Publications

From the Miller Publishing Company
2501 Wayzato Boulevard
Minneapolis 40, Minnesota
"Feed Stuffs" -- a weekly publication of approximately 70 pages per issue @ $6.00 per year or $9.00 for 2 years.
"Feed and Farm Supplier," Sandstone Building, Mount Morris, Illinois
From the Ralston Purina Company (perhaps the other major companies have helpful materials)
Checkerboard Square
St. Louis 2, Missouri
"The Purina Salesman's Job"
"Animal and Poultry Nutrition"
"This is Ralston Purina"

REFERENCES ACCORDING TO LEARNINGS

1. To understand the importance of an economical feeding program to success in livestock production	The Handbook of Feedstuffs, pp. 179-80 Animal Science and Industry, pp. 148-49, 150-52 Raising Livestock, pp. 113-17 Feed Formulations Handbook, pp. 5-8
2. To know the factors affecting the success of a feed dealer	The teacher will need to guide the student to see and understand that certain factors determine the success of a feed dealer Students should see that they as trainees in the feed store will play a part in the success or failure of the business
3. To understand how farm animals use their feed	The Handbook of Feedstuffs, pp. 315, 532-37 Raising Livestock, pp. 117-23 Livestock and Poultry Production, pp. 1-12, 31-35
4. To know the feed ingredients and their characteristics	The Handbook of Feedstuffs, pp. 36, 39, 182-88 Feeds and Feeding, pp. 269-304 Feed Formulations Handbook, pp. 167-75 Livestock and Poultry Production, pp. 13-30
5. To relate animal needs to characteristics of feeds	Raising Livestock, pp. 123-124 Feeds and Feeding, pp. 103-128 Feed Formulations Handbook, pp. 105-10, appropriate pages in chapters 6-11

6. To know the milling processes	The Handbook of Feedstuffs, pp. 181 Feeds and Feeding, pp. 38-42, 272-74, 278-82, 285, 289-91, 294, 296-97, 299-302 Feed Formulations Handbook, pp. xv-xxi
7. To know how to supply feed to customers	Raising Livestock, pp. 124-26
8. To understand the trends in merchandising feeds	Animal Science and Industry, pp. 19-21, 160-61 Feed Formulations Handbook, pp. 1-5, 147-58 Feeds and Feeding, pp. 136-43
9. To understand the feed regulatory program and the description of feeds	Livestock and Poultry Production, pp. 40-42 Feed Formulations Handbook, pp. 213-218 Regulatory Bulletin 190 Information Sheet, p. 154
10. To understand the use of additives in feed	Animal Science and Industry, pp. 144-45 Livestock and Poultry Production, pp. 6-8, 10

RELATED MATERIALS

SOME PRINCIPLES OF MERCHANDISING TO CONSIDER WHILE TEACHING THIS UNIT

Consumer demand is the hub around which our free enterprise system operates.

The retailer must serve the changing consumer by providing new and improved goods at low prices with the attendant services the consumer demands.

A small scale dealer must take advantage of certain things such as personal service, specialization, convenience of location, and easy adjustment if he is to be competitive.

Selling is assisting an individual or group of individuals to make a buying decision to the mutual advantage of both parties.

Four important buying decisions are: need, thing, source, and price. They involve such questions as:

Do I need it?
Is it exactly right?
Can I rely on the seller?
Do I need it now?

SOME IMPORTANT TERMS USED IN THE FEED TRADE

1. Commercial feed -- material distributed as a feed or for mixing in a feed.

2. Formula feed -- two or more ingredients proportioned, mixed, and processed according to specifications.

3. Commercial formula feed -- feed processed to the specifications of the manufacturer.

4. Customer formula feed -- feed processed to the specifications of the customer.

5. Feed ingredients -- the separate materials or constituents making up a feed.

6. Complete feed -- feed containing all the nutrients (except water) needed to sustain life, growth, and/or production.

7. Supplement -- feed material added to a basic ration for the specific purpose of correcting a deficiency.

8. Concentrate -- feed that is high in energy and digestible nutrients and low in fiber.

9. Mash -- mixture of non-processed and/or individually processed ingredients or combinations.

10. Meal feed -- feed in which all ingredients have been reduced to very small particles.

11. Agglomerated feeds -- compacted or extended form of ingredients such as pellets, cubes, crumbles, wafers, etc.

12. Pellets -- agglomerated feeds formed by compacting and forcing feed through die openings by a mechanical means.

13. Cubes -- large pellets.

14. Crumbles -- pellets reduced to granular form.

15. Rolled grain -- grain flattened by rollers.

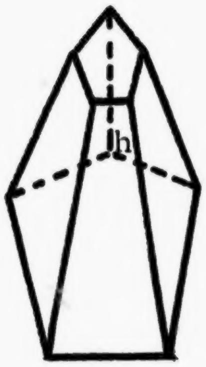
16. Crimped grain -- grain flattened by corrugated rollers.

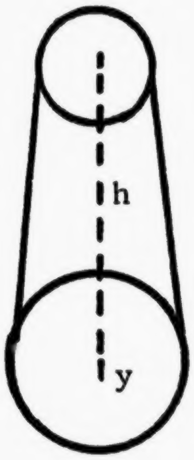
17. Additives -- antibiotics, drugs, tranquilizers, hormones, arsenicals, chemobiotics, and other substances that are not nutrients.

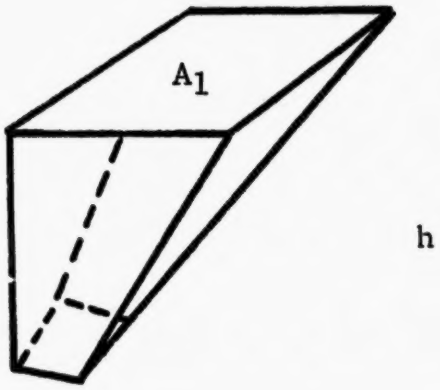
18. New drug -- a drug that has not been approved by the Food and Drug Administration for general use. A new drug application must be filed and approved each time it is used.

19. "Not a new drug" -- a drug that can be used with special application. Use must still be within definite limitations.

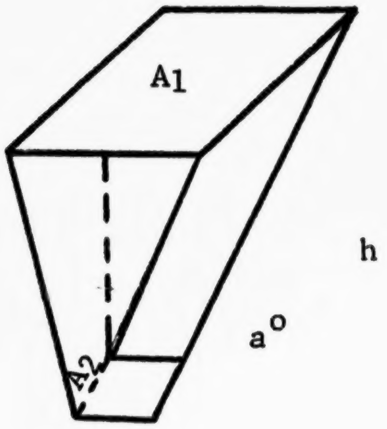
DETERMINING THE VOLUME OF FEED BINS







Frustum of any pyramid or cone (the frustum is the portion of a cone of pyramid left after the point has been removed on a place parallel to the base).



With: Area top = A_1

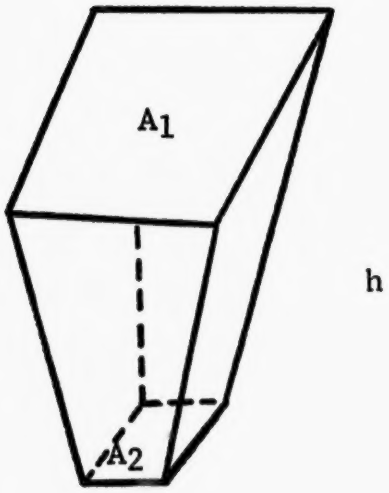
Area bottom = A_2

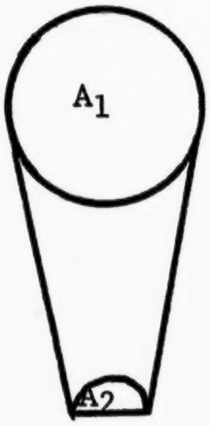
$$V = \frac{h}{3}(A_1 + A_2 + A_1 \times A_2)$$

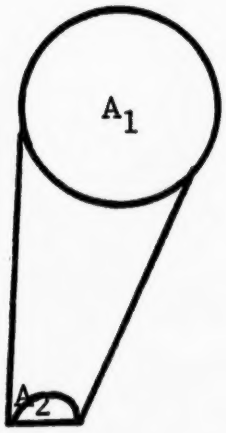
If angle is 60° for all of them

Fig. 1 -- Rectangular bin hopper, 60° center draw-off
2 -- Rectangular bin hopper, 60° corner draw-off
3 -- Rectangular bin hopper, 60° side draw-off
4 -- Round bin hopper, 60° center draw-off
5 -- Round bin hopper, 60° side draw-off

Volumes of hoppers $V = \frac{h}{3} (A_1 + A_2 + A_1 \times A_2)$







HOW TO UNDERSTAND A FEED TAG

The Kentucky feed law requires that each sack of concentrate feed sold in the state must carry an official tag. This tag must give the following information, which is the manufacturer's guaranty to the state.

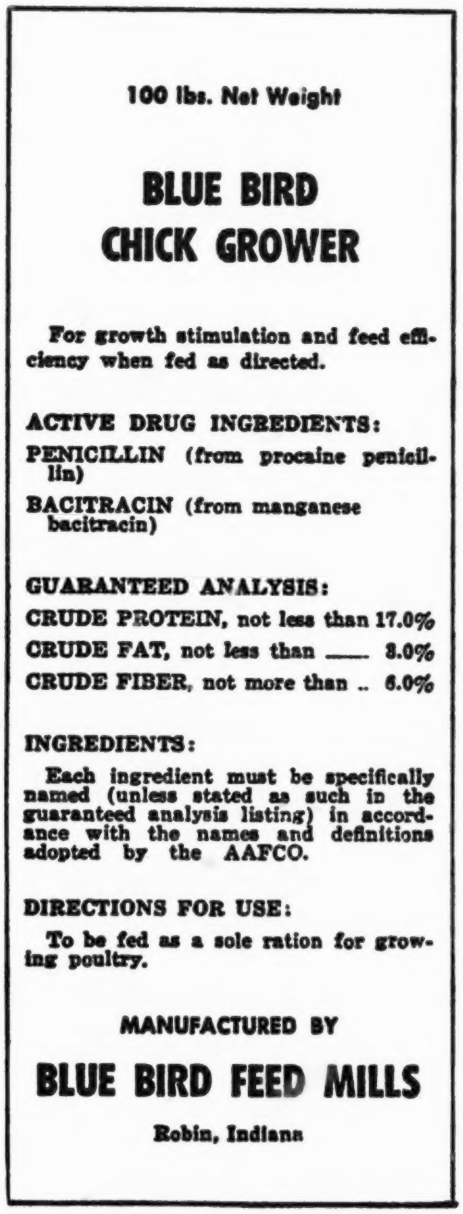
1. Net weight of contents of bag.
2. The brand name of the feed. No word or phrase may be used in naming a special purpose mixed feed which may lead a purchaser to think that it is a feed for a specific class of livestock unless it contains certain minimum standards. For example, a feed labeled as dairy feed must contain at least 16 percent crude protein, 2.5 percent crude fat, and not more than 15 percent crude fiber. A feed must also contain a sufficient variety of first-class ingredients suitable for the livestock which it is intended.
3. Name and address of manufacturer or dealer.
4. Minimum percent of crude protein.
5. Minimum percent of crude fat.
6. Maximum percent of crude fiber.
7. The specific name of each ingredient.
8. If a material of little or no feeding value is used, such as cob meal, oat hulls, cottonseed hulls, mill sweepings, or weed seeds, the percentage must be given, and the total of such materials must not exceed 25 percent.
9. If screenings are used, the percentage must be given and the statement whether ground or unground.
10. All labels for feeds containing antibiotics must give the purpose for which the antibiotics are used after the brand name of the feed. The percentage of the antibiotics used in the feed does not have to be shown. Feeding directions must be shown on the label for such products. The word "Medicated" under the brand name is not a requirement on labels for feed containing antibiotics for growth promotion and food efficiency. This kind of feed requires a type "A" label shown on the following page.
11. All feeds containing drugs must have the word "Medicated" under the brand name. The purpose for which the feed is used should be listed next and under this the active drug ingredients. This label (type "B" shown on following page) is to be used for all feeds which contain drugs for special purposes such as prevention of diseases, treatment of diseases, aid in control of diseases, hormone action, worming, etc. This label is also on feeds containing growth promotion drugs other than antibiotics. All labels for feed containing drugs should have feeding directions and withdrawal notices when necessary.

On labels for pre-mixes, concentrates and supplements containing drugs or antibiotics, the percentage of antibiotics must be shown and adequate mixing directions to provide a finished feed with the proper concentration of antibiotics and drugs.

The percentage of protein and fat shown on a feed tag are those found by chemical analysis. Not all of this protein or fat is digestible, however, and it is only the digestible part of the feed that benefits the animal. Where first-class ingredients are used in home-mixed feeds or in special-purpose mixed feeds, about 75 to 85 percent of the nutrients in the mixture is digestible. A high percentage of crude fiber indicates low digestibility. Purchasers of feed should keep these facts in mind.

TYPE A LABEL

To Be Used For Feeds
Containing Antibiotics At The
Accepted Levels For Growth Promotion
And / Or Feed Efficiency



100 lbs. Net Weight

BLUE BIRD
CHICK GROWER

For growth stimulation and feed efficiency when fed as directed.

ACTIVE DRUG INGREDIENTS:

PENICILLIN (from procaine penicillin)

BACITRACIN (from manganese bacitracin)

GUARANTEED ANALYSIS:

CRUDE PROTEIN, not less than 17.0%
CRUDE FAT, not less than 3.0%
CRUDE FIBER, not more than .. 6.0%

INGREDIENTS:

Each ingredient must be specifically named (unless stated as such in the guaranteed analysis listing) in accordance with the names and definitions adopted by the AAFCO.

DIRECTIONS FOR USE:

To be fed as a sole ration for growing poultry.

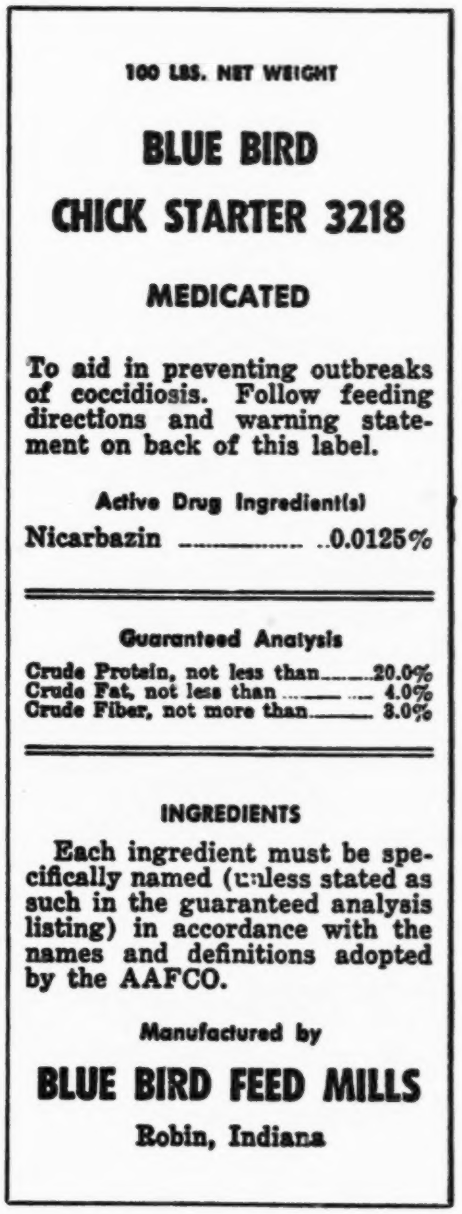
MANUFACTURED BY

BLUE BIRD FEED MILLS

Robin, Indiana

TYPE B LABEL

To Be Used For
All Medicated Feeds



100 LBS. NET WEIGHT

BLUE BIRD
CHICK STARTER 3218

MEDICATED

To aid in preventing outbreaks of coccidiosis. Follow feeding directions and warning statement on back of this label.

Active Drug Ingredient(s)

Nicarbazin 0.0125%

Guaranteed Analysis

Crude Protein, not less than........20.0%
Crude Fat, not less than 4.0%
Crude Fiber, not more than......... 3.0%

INGREDIENTS

Each ingredient must be specifically named (unless stated as such in the guaranteed analysis listing) in accordance with the names and definitions adopted by the AAFCO.

Manufactured by

BLUE BIRD FEED MILLS

Robin, Indiana

UNIT: SEEDS

Number of class periods ________________ Month(s) ______________________

Major objective to be attained through the unit: To develop the effective ability to work as a salesperson in an agricultural-supply store selling seed.

Learnings Needed to Reach the Objective

(The teacher will need to consider the learnings already secured by the students and modify this list to meet the needs of the particular group.)

1. Understand the importance of quality seed in the production of crops
    a. Characteristics of good seed: (1) clean, (2) disease free, (3) viable, (4) well developed, and (5) of good heritage
    b. Effect of each of the above characteristics on crop production
    c. Cost of good seed relative to the total value of the crop
    d. Importance of adapted varieties of seed in securing good production
    e. Percent of crop production cost allocated to seed

2. Understand how quality seeds are produced
    a. How seeds are formed
    b. The role of the plant breeder in quality-seed production
    c. The role of the foundation seed grower
    d. The function of the registered or certified seed grower (source of the commercial seed)
    e. Certification of seed
    f. The Kentucky Seed Improvement Association and its role in certification of seed

3. Understand how quality is controlled and regulated in the seed industry
    a. The Kentucky seed law and its purpose
    b. Rules and regulations for administering the seed law
    c. Administrative agent of the seed law
    d. Seed label requirements
    e. Information included on the seed tag
    f. Tagging seed for sale
    g. Rules for taking samples of seed for analysis

4. Understand physical problems involved in marketing seed
    a. Storage of seed to prevent damage from vermin and weather
    b. Prevention of damage to containers in handling
    c. Labor saving practices in handling seed
    d. Prevention of contamination or mistaken identity of seed in handling (particularly in broken lots)
    e. Loss or waste due to spillage or broken containers

5. Know kinds and varieties of seeds
    a. Be able to identify by physical appearance the various kinds of seeds commonly sold in local stores
    b. Know the names of varieties of plants or crops generally recommended or requested on the local market
    c. Know some of the desirable characteristics of recommended varieties

6. Know mixtures of seed locally recommended for various purposes
    a. Cover-crop mixtures
    b. Pasture mixtures
    c. Lawn mixtures
    d. Hay-crop mixtures
    e. Seed mixtures and seeding rates approved under ASC practices

7. Know season and seeding dates for plants for local conditions
    a. Field crops
    b. Vegetable and garden plants
    c. Lawn plants

8. Know weights and measures of seeds
    a. Weights per bushel, pint, bag, or other volume container by which the particular seed is sold
    b. Test-weight of seed and its relation to quality and sales
    c. Standard packaging of seed handled locally

9. Understand chemical or biological treatments given or needed by various seeds
    a. Inoculation of legume seed
    b. Chemical treatment for insects and fungi control
    c. The effect of seed treatment on use for feed or food

10. Know the fertility and cultural needs for seeds commonly sold
    a. Lime and fertilizer needs for common crops
    b. Proper degree of seed-bed preparation for good seed germination
    c. Rates of seeding for various plants
    d. Depth of covering seed

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

In introducing this unit, the importance of using quality seed in the production of crops should be stressed. Many farmers do a poor job of selecting quality seed and as a result crop production is lowered.

Many customers depend on the store salesman for recommendations and advice when purchasing seed. Oftentimes they will need and want help on selecting the variety(s) of seed, determining the amount of seed needed, deciding on the time to seed, and how to plant or seed.

Student Goals

As a result of dealing with this unit, the teacher should cause each student to set goals similar to the following:

1. To know the importance of quality seed
2. To know how quality seed is produced and how quality is regulated
3. To be able to select seed on the basis of the information on the seed tag
4. To recognize different kinds of seed by appearance
5. To know seeds and mixtures recommended for the community
6. To know when various crops should be seeded
7. To know weights and measures of common seeds
8. To know common seed treatments
9. To know fertility and cultural practices needed for various seeds

Providing the Class Instruction

To secure the learnings in this unit the series of lessons which follow are suggested:

1. How important is quality seed in producing crops?
2. How are quality seeds produced?
3. How is quality controlled and regulated in the seed industry?
4. How read and interpret a seed tag?
5. What problems are involved in marketing seed?
6. What varieties are recommended for the area?
7. What seed mixtures are recommended for various purposes in the area?
8. When should various crops be seeded for best results?
9. What are the weights and measures of common seed?
10. What treatments are necessary for various seeds?
11. What are the lime and fertilizer requirements for various crops?
12. How seed common crops?

Teaching Suggestions

The following teaching techniques and aids are suggested:

In learning #1 the student should learn to determine the value of seed per 100 pound of live seed, see RELATED MATERIALS: GOOD SEED COSTS YOU LESS.

In dealing with a part of learning #3 -- students should read and interpret seed tags. Tags can usually be secured from the local seed store. Under RELATED MATERIALS, there are four seed tags which can be used in teaching students to select seed based on information on seed tags.

In dealing with learning #5 it is suggested that the department Seed Identification Kit be used to help students identify different seeds by physical appearance.

Student Participation

Students should prepare a list of recommended varieties of seed for their local area. Local businessmen should be consulted when the list is prepared. The list should be added to the student's information folder.

Students should prepare charts for use in selling seed in their training stations. Information on the chart should include:

a. Recommended variety(s)
b. Seeding date(s)
c. Seeding rate per 50 feet or per acre
d. Planting depth
e. Maturity date

Students should practice, in the classroom, making recommendations on:

-- Variety of seed to purchase
-- Mixtures of seed to use
-- Season and seeding dates
-- Seed treatments to use
-- Fertility and cultural practices to use

Getting Decisions Made and Carried Out

The teacher should lead the students to make sound decisions to the problems dealt with in this unit. Sound decisions with clear understandings will do much to assure success of students in the sales of seeds. Students should make verbal application of the conclusions arrived at in class -- followed by practice at the training stations. The teacher should work with the employers to get the learnings studied in class carried out on the job.

References

Books

+Seeds; Yearbook of Agriculture, (USDA -- 1961.)

Field Crops; Fergus and Hammonds, (J. B. Lippincott Co., Inc., Chicago -- 1958.)

Producing Farm Crops; Wilson and Richer, (The Interstate, Danville, Illinois -- 1960.)

+If you cannot secure a copy through your congressman, it can be ordered from: Superintendent of Documents, United States Government Printing Office, Washington, D. C. (Price -- $2.00)

Bulletins and Other Publications

Regulatory Bulletin 47, The Kentucky Seed Law, University of Kentucky
Kentucky Circular 510, Pasture in Kentucky
Kentucky Circular 589, Red Clover in Kentucky
Kentucky Misc. 90, Forage and Grain Crops for Kentucky
Kentucky Misc. 139, Get Good Crop Yields -- Plant These Varieties
Kentucky Misc. 225, Recommended Field Crop Varieties for Kentucky
Kentucky Misc. 326, Establishing a Lawn in Kentucky
Kentucky Leaflet 188, What is Certified Seed?
Kentucky Leaflet 203, Recommend Vegetable Varieties for Kentucky
Kentucky Leaflet 211, Sowing Alfalfa in Kentucky
Kentucky Leaflet 224, Seed Treatment for Small Grains, Corn, and Sorghum
Kentucky Leaflet 240, Growing Alfalfa Successfully
Kentucky Leaflet 252, Growing Timothy in Kentucky
Kentucky Seed Tags
1966 ASC Handbook of Practices

Units (Department of Agricultural Education, University of Kentucky)

HS 17 -- Producing Hay, 1961
HS 18 -- Growing Alfalfa, 1961

REFERENCES ACCORDING TO LEARNINGS

1. To understand the importance of quality seed in the production of crops	*Seeds, pp. 408-11 Field Crops, pp. 435-40 Producing Farm Crops, p. 150 Unit: Producing Hay, p. 5
2. To understand how quality seeds are produced	*Seeds, pp. 113, 128 Field Crops, pp. 440-44 Producing Farm Crops, pp. 145-48
3. To understand how quality is controlled and regulated in the seed industry	*Seeds, pp. 408, 411 Field Crops, pp. 440, 444-45 Producing Farm Crops, pp. 148-49 Regulatory Bulletin 47 Kentucky Leaflet 188 Kentucky Seed Tags

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*Teacher reference

4. To understand physical problems involved in marketing seeds	*Seeds, pp. 499-501 Field Crops, p. 440
5. To know kinds and varieties of seeds	Kentucky Misc. 90, pp. 1-15 Kentucky Misc. 139, 225 Kentucky Misc. 326, pp. 3-4 Kentucky Leaflet 203 Unit: Growing Alfalfa, p. 4 Unit: Producing Hay, p. 5
6. To know mixtures of seed locally recommended for various purposes	Kentucky Circular 510, pp. 20-21, 25-26 Kentucky Circular 589, p. 7 Kentucky Misc. 326, p. 4 Kentucky Leaflet 240, p. 5 Kentucky Leaflet 252, pp. 3-4 1966 ASC Handbook of Practices
7. To know season and seeding dates for plants for local conditions	Field Crops, pp. 301-02 Kentucky Circular 510, pp. 18-20 Kentucky Circular 589, p. 6 Kentucky Misc. 90, pp. 16-17 Kentucky Misc. 326, p. 3 Kentucky Leaflet 203
8. To know weights and measures of seeds	Field Crops, p. 301 Kentucky Misc. 225
9. To understand chemical or biological treatments given or needed by various seeds	*Seeds, pp. 272-80 Field Crops, pp. 296-98 Kentucky Leaflet 224

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*Teacher reference

10.a. To know the lime and fertilizer requirements for various seeds

Field Crops, pp. 40-43, 160-69, 203, 242-47, 295-96
Kentucky Misc. 326, p. 2
Kentucky Leaflet 211
Unit: Growing Alfalfa, pp. 2-3

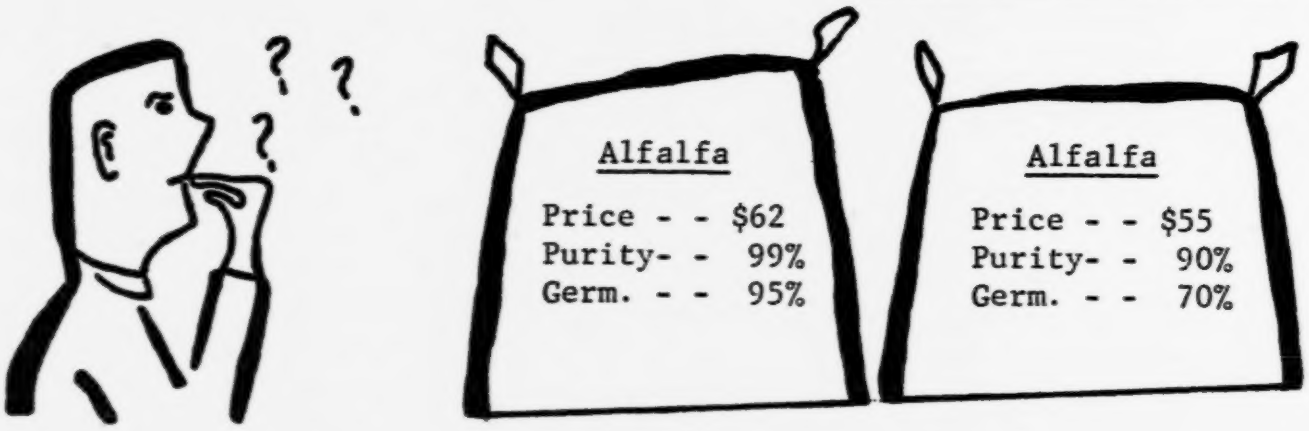
10.b. To know how to seed common crops

Field Crops, pp. 49-51, 52-56, 235-36, 295-96, 298-301
Kentucky Circular 510, pp. 21-24
Kentucky Misc. 90, pp. 16-17
Kentucky Leaflet 211
Unit: Growing Alfalfa, pp. 4-5

RELATED MATERIALS

GOOD SEED COSTS YOU LESS

Which is the better buy?



$\frac{\text{Price per hundred}}{\text{Purity x germination}}$ = price per 100 lbs. of live seed

Good Seed $\frac{\$62}{.99 \times .95}$ = \$66 per 100 lbs. of live seed

Bargain Seed $\frac{\$55}{.90 \times .70}$ = \$87 per 100 lbs. of live seed

FIELD PERFORMANCE COST

95 percent germination in laboratory = about 50 percent germination in the field

70 percent germination in laboratory = about 30 percent germination in the field

$\frac{\text{Price per hundred}}{\text{Purity x field germination}}$ = Cost per 100 lbs. contributing to field stand

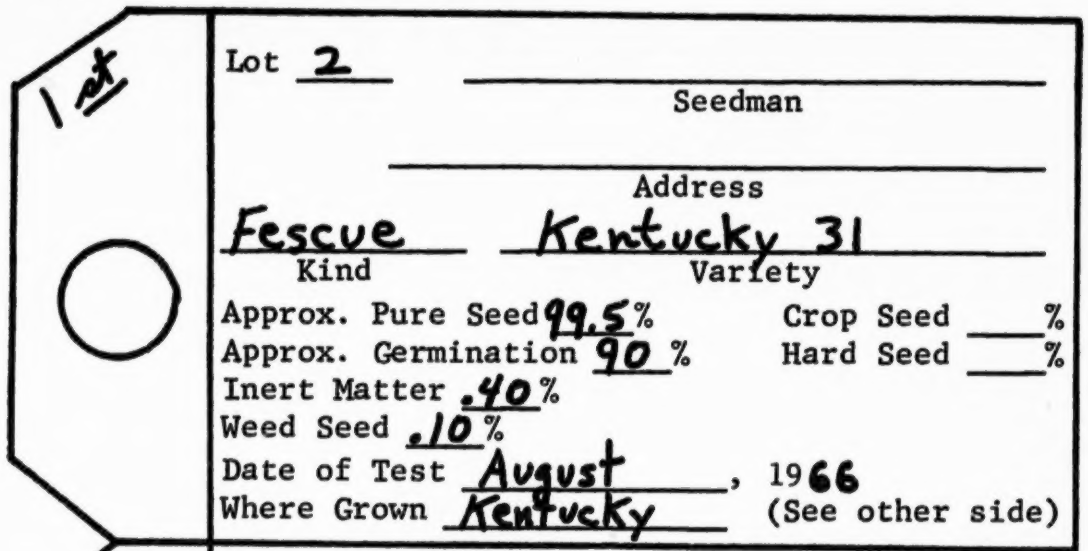
Good Seed $\frac{\$62}{.99 \text{ x } .50}$ = \$125 per 100 lbs. contributing to field stand

Bargain Seed $\frac{\$55}{.90 \text{ x } .30}$ = \$204 per 100 lbs. contributing to field stand

(Figure with boys to show how much this is per acre)

(From HS 18, Growing Alfalfa)

Correct Placement of Seed Tags


1st

Lot 2

Seedman

Address

Fescue Kentucky 31

Kind Variety

Approx. Pure Seed 99.5 % Crop Seed ___ %

Approx. Germination 90 % Hard Seed ___ %

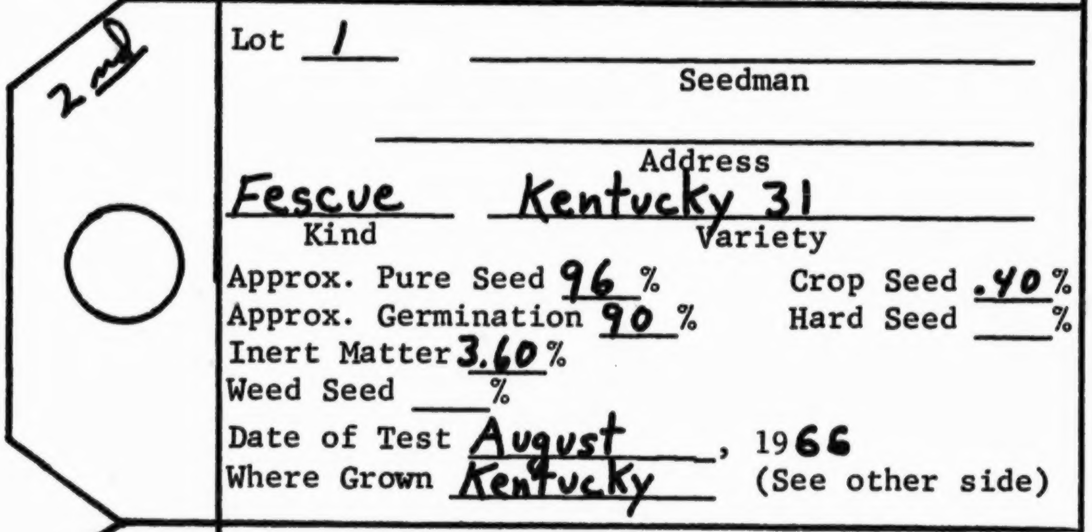
Inert Matter .40 %

Weed Seed .10 %

Date of Test August, 1966

Where Grown Kentucky (See other side)

1. The variety is good.
2. Good seed per 100#
   99.50 pure
   .90 germination
   89.55# of good seed per 100#
3. No noxious weeds
4. Date of test is OK.


2nd

Lot 1

Seedman

Address

Fescue Kentucky 31

Kind Variety

Approx. Pure Seed 96 % Crop Seed .40 %

Approx. Germination 90 % Hard Seed ___ %

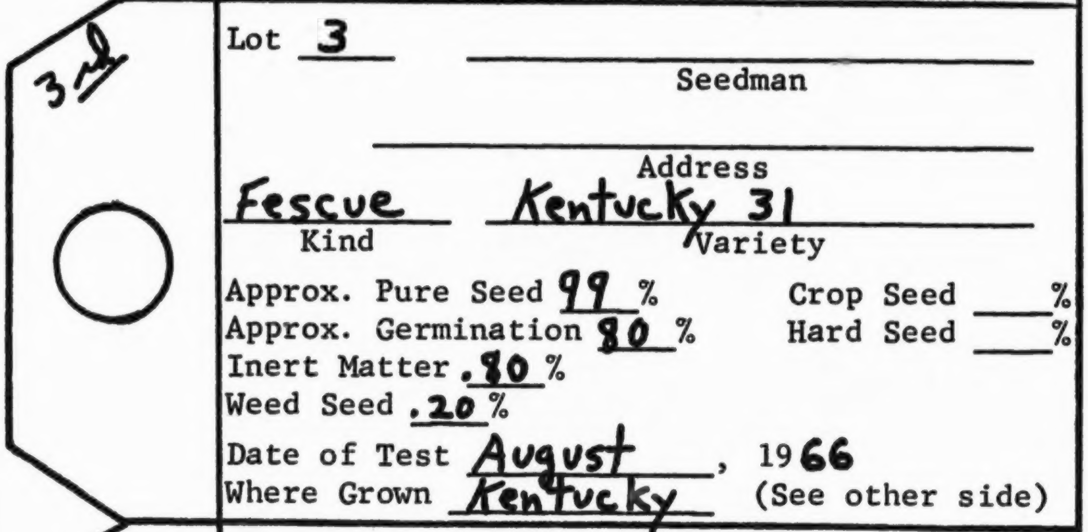
Inert Matter 3.60 %

Weed Seed ___ %

Date of Test August, 1966

Where Grown Kentucky (See other side)

1. Variety is an adapted one.
2. Good seed per 100#
   96 pure
   .90 germination
   86.40# of good seed per 100#
3. Weed seed - none
4. Date of test is OK.


3rd

Lot 3

Seedman

Address

Fescue Kentucky 31

Kind Variety

Approx. Pure Seed 99 % Crop Seed ___ %

Approx. Germination 80 % Hard Seed ___ %

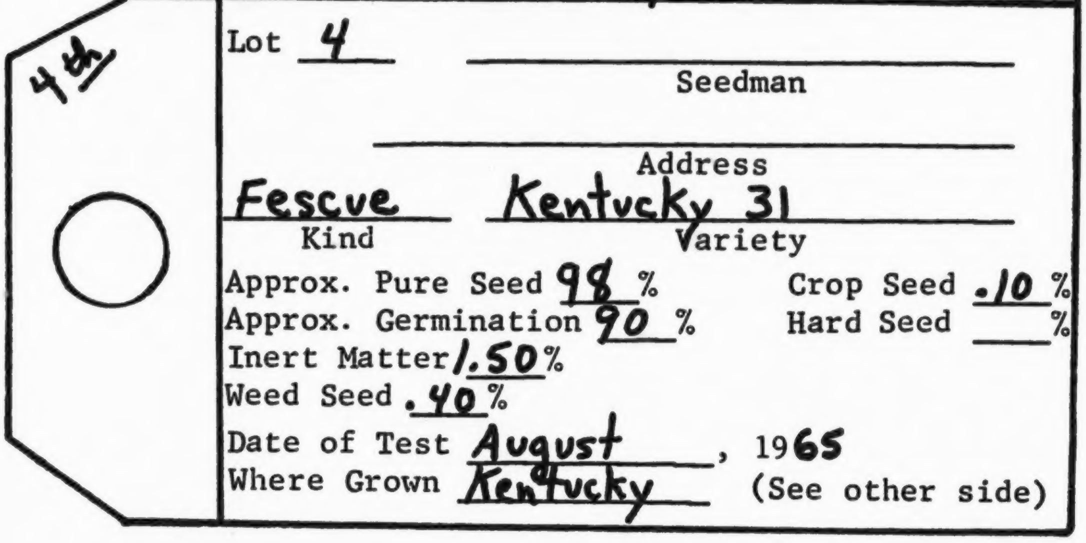
Inert Matter .80 %

Weed Seed .20 %

Date of Test August, 1966

Where Grown Kentucky (See other side)

1. Variety is adapted to Kentucky.
2. Good seed per 100#
   99 pure
   .80 germination
   79.20# of good seed per 100#
3. No noxious weeds
4. Date of test is OK.


4th

Lot 4

Seedman

Address

Fescue Kentucky 31

Kind Variety

Approx. Pure Seed 98 % Crop Seed .10 %

Approx. Germination 90 % Hard Seed ___ %

Inert Matter 1.50 %

Weed Seed .40 %

Date of Test August, 1965

Where Grown Kentucky (See other side)

1. Variety is adapted to Kentucky.
2. Good seed per 100#
   98 pure
   .90 germination
   88.20# of good seed per 100#
3. Noxious weeds (on back) 36 Johnson grass per ounce
4. Date of the test is too old.

LEGUMES THAT MAY BE INOCULATED BY THE SAME KIND OF BACTERIA

Group 1	Group 2	Group 3	Group 4	Group 5
Alfalfa	Red Clover	Cowpeas	Common vetch	Soybeans require a specific strain of bacteria; so does birdsfoot trefoil.
Button Clover	Mammoth Red Clover	Beggarweed	Field pea	
Bur Clover	Alsike Clover	Lespedeza	Hairy vetch	
Yellow trefoil	Crimson Clover	Crotolaria	Austrian Winterpea	
Sweet Clover	White Clover	Kudzu		
Black Medic	Hop Clover	Peanuts		
		Velvetbean		
		Partridge pea		

MINIMUM STANDARDS TO USE IN BUYING SEEDS

Crop	Pure Seed, Minimum Percent	Germination Including Hard Seed, Minimum Percent
Alfalfa	99	90
Red Clover	98-99	90
Ryegrass	90	85
Orchard Grass	85	85
Kentucky Bluegrass	85	80
Fescue	99	90

(Doane Agricultural Digest)

SEEDING RATES WHEN MIXTURES ARE USED (POUNDS PER ACRE)

Highly Productive Soils		Soils of Medium Fertility		For Wet Land	
Kentucky bluegrass	15 lbs.	Orchard grass	10 lbs.	Redtop	6 lbs.
Alfalfa	8 lbs.	Redtop	3 lbs.	Alsike	5 lbs.
Lespedeza	5 lbs.	Lespedeza	5 lbs.	Lespedeza	5 lbs.
Orchard grass	8 lbs.	Redtop	5 lbs.	Ky. 31 fescue	10 lbs.
Kenland red clover	6 lbs.	Lespedeza	8 lbs.	Lespedeza	8 lbs.
Lespedeza	7 lbs.				
Smooth brome grass	8 lbs.	Ky. 31 fescue	10 lbs.		
Alfalfa	8 lbs.	Lespedeza	10 lbs.		
Ladino	½ lb.				
Timothy	5 lbs.				
Ky. bluegrass	10 lbs.				
Kenland red clover	7 lbs.				

(From HS 17, Producing Hay)

AMOUNT OF SEED TO SOW

Grasses Kind of Seed	Pounds of Seed Per Acre	Legumes Kind of Seed	Pounds of Seed Per Acre
Fescue (Ky. 31) - - - - - -	8-15	Alfalfa - - - - - - - - - -	12-15
Orchard grass - - - - - - -	10-15	Lespedeza - - - - - - - -	20-25
Smooth brome grass - - - -	15-20	Red clover - - - - - - -	8-12
Timothy - - - - - - - - - - -	6- 8	Sweet clover (hulled) - -	12-15
Sudan - - - - - - - - - - - -	20-30	White clover - - - - - -	1- 5
Redtop - - - - - - - - - - -	3- 5		

(From HS 17, Producing Hay)

UNIT: FERTILIZERS

Number of class periods ______________ Month(s) ______________________

Major objective to be attained through the unit: To develop the effective ability to be a salesperson in an agricultural-supply store selling fertilizers and to use fertilizers wisely.

Learnings Needed to Reach the Objective

(These learnings may need to be changed to meet the needs of students in a class preparing for an agricultural occupation -- sales and service in an agricultural-supply business or for farming. Perhaps some learnings should be deleted from the list; others may need to be added.)

1. To understand the importance of fertilizer in modern farming

   a. The kind and amount of fertilizer used in Kentucky
   b. The chemical elements used in fertilizers
   c. Kind of farming in Kentucky
   d. Understand what is involved in "fixed cost" and what increased fertilizer (a variable cost) will mean in additional yields and profit
   e. A deficiency in only one nutrient may limit crop yields

2. To use soil tests to determine fertilizer and lime needs

   a. Kinds of information soil tests provide

      -- Forms on which soil-tests results are reported
      -- Terms in which the amounts of nutrients in the soil are reported
      -- Relation of phosphorus (P) to phosphoric acid (P_2O_5)
      -- Relation of potassium (K) to potash (K_2O) in fertilizers
      -- Relation of pH to the need for materials supplying lime to the soil

   b. Amount of nitrogen (N), phosphorus (P), and potassium (K), needed for high crop yields

      -- Differences in crop requirements
      -- Depends upon a desirable soil reaction -- level of soil acidity

   c. The desirable level of soil acidity (pH) for high crop yields

      -- Differences in crop requirements
      -- Depends upon the physical properties of soil

   d. Take soil samples

      -- Location from which soil samples should be collected
      -- Time of year for taking samples

-- Secure representative samples

  -- From the plow layer
  -- From the field to be tested
  -- From the farm

-- Equipment and materials needed
-- Mechanics of taking and handling soil samples
-- Demonstrate how to take a soil sample

e. Use results of soil tests

-- Understanding and analyzing the results of soil tests
-- Meaning of "available nutrients"
-- What high, medium, and low levels of available phosphorus (P) and potassium (K) are
-- Importance of crop history and past fertilizer applications in understanding and using the results of soil tests
-- Determine the need for lime from the soil-test results
-- Use soil tests in planning the fertility program
-- Explain soil-test results to customers

3. To understand the basic things to consider in making fertilizer and lime recommendations

a. Basis for recommendation

-- Soil test
-- Soil treatment history
-- Crop yield for last year
-- Desired crop yield

b. Crops to be grown

-- Name those grown in the community

c. Source of nutrients

-- Soil
-- Air
-- Water

d. Understand sources of materials

-- Complete fertilizers
-- Straight fertilizers
-- Manure
-- Green-manure crops and crop residues
-- Nutrients available in the soil

e. Ratios and minimum grades of fertilizer

Ratio	Minimum Grade
0-1-1	0-12-12
0-1-2	0-10-20

(continued)

Ratio	Minimum Grade
0-2-1	0-14- 7
1-1-1	10-10-10
1-1-3	6- 6-18
1-2-2	5-10-10
1-2-3	5-10-15
1-3-2	4-12- 8
1-4-4	3-12-12

4. To recommend kinds and amounts of fertilizer and lime to farmers for specific crops

a. Fertilizer

-- Calculate the percent of plant food in a fertilizer

Divide the amount of plant nutrient wanted by the percent of that particular nutrient and multiply the quotient by 100. Example: How much 20 percent superphosphate is required to supply 160 pounds of P_2O_5?

Solution: 160 ÷ 20 = 8 8 x 100 = 800 pounds

-- Explain how a deficiency in one nutrient may limit crop yields

-- Know the plant nutrients and their source

Carbon
Oxygen
Hydrogen
Nitrogen
Phosphorus
Potassium

Calcium
Magnesium
Sulfur
Iron
Manganese
Boron

Zinc
Copper
Molybdenum

Carbon and oxygen comes from the air (part of nitrogen, only in case of inoculated legumes)
Hydrogen is obtained from water
Other nutrients come from the soil

-- The nutrients in which soils are most likely to be deficient are:

Nitrogen
Phosphorus
Potassium
Calcium

-- An acre of soil to a depth of 6 to 7 inches weighs about 2 million pounds. It contains the following amounts of N, P, and K.

Nitrogen -- From 1,400 lbs. to 7,500 lbs.
Phosphorus -- Few pounds to 9,000 lbs.
Potassium -- About 30,000 lbs.

- Plant nutrients available in the soil

    Nitrogen -- About 2 percent of that in the plow layer
    Phosphorus -- About 1 percent of that in the plow layer
    Potassium -- About .25 percent of that in the plow layer

- Compare costs of bulk and bag fertilizers
- Figure the amount of phosphorus and potassium in a fertilizer

    Amount of P_2O_5 x 0.436 = amount of phosphorus
    Amount of K_2O x 0.83 = amount of potassium

- What the fertilizer tag can tell us

    - What do these numbers mean?

        3-12-12
        0-12-12
        0-20- 0

        Which is a complete fertilizer?

- Determine the amount of N, P, and K needed (and the desirable soil reaction -- pH) for good crop yields (use specific crops)
- Determine the amount of available plant nutrients (soil test)
- Determine the amount of N, P_2O_5 and K_2O added in manure and crop residues
- Consider the plant efficiency in using available nutrients in the soil and total nutrients in fertilizers

    - Lenth of growing season
    - Type of root system
    - Feeding power of crop

- Plan to supply the nutrients needed (see learning #3)
- Determine the need for trace elements for certain crops
- Explain to the farmer what different grades of fertilizers will do

    - Advantages of using high-quality fertilizer

- Evaluate the fertilizer program being followed for various crops and determine changes needed
- When to buy fertilizer
- Time to apply fertilizer
- Make recommendations and explanations in language of farmer

    -- Show an honest concern for customers who do not follow good fertilizer practices

- b. Lime
    - -- Determine the degree of soil acidity -- pH (soil test)
    - -- Correct the pH of the soil
        - -- Select liming materials
        - -- Decide on rate of application
        - -- Determine when to apply lime
- c. Develop a long-time plan for improving crop yields
    - -- Proper use of manure and crop residues
    - -- Maintain the supply of organic matter
    - -- Make effective use of fertilizers and lime

5. To compute and explain the cost for a given fertilizer application
    - a. Recommend fertilizer
        - -- Amount of fertilizer
        - -- Kind of fertilizer
    - b. Compute and explain cost of fertilizer to the customer
        - -- Cost per unit of plant food
        - -- Compare cost of a straight fertilizer and a mixed fertilizer
    - c. Show the customer the advantages of using fertilizer
        - -- Increased yields
        - -- Lower unit cost of production
        - -- Increase size of business on the farm
        - -- Increase total profit

6. To adjust fertilizer equipment to a specified rate and apply fertilizer
    - a. Determine the per-acre amount of fertilizer the machine is set to handle
    - b. Adjust the machine for more or less per acre
    - c. Regulate the placement of fertilizer
    - d. Point out the importance of using a clean, free-running fertilizer
    - e. Emphasize the importance of cleaning the mechanism at the end of the day
    - f. Demonstrate the above procedures on the farm of a customer. Stay with him until the machine is working properly.
    - g. Lubricate the machine as needed

7. To make on-farm contacts for studying fertilizer needs making recommendations and sales

a. Determine the fertilizer needs in the total farm business
b. Evaluate crop production on the farm
c. Evaluate the fertilizer program now being carried on
d. Take soil samples
e. Determine the amount of nutrients needed to increase crop production to an acceptable level (see learning #4)

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

This unit was developed for use in classes in which some boys are preparing to be employees in agricultural-supply stores that sell fertilizer. The emphasis is on merchandising fertilizer (what to buy, what to sell, when to sell, reasons for recommending specific kinds, and how to relate this information in being of service to the customer) and the economics of it. A good understanding of the principles and practices of using fertilizers on a farm is needed as a background for this unit. Students should have this background if they have had three years of vocational agriculture where the units "Soils in Relation to Crops" and "Using Fertilizers and Other Soil-Building Materials" have been taught. If the students do not have a background of learnings in fertilizers, these will need to be served before moving to deal with the series of lessons in this unit.

Students should be reminded that farmers are businessmen. If they are to remain customers of agricultural businesses, they must purchase the kind of fertilizer that will give good results on their farms. However, it is not enough just to sell the farmer fertilizer. It must be done in such a way as to compete with other businesses which are interested in supplying the fertilizer needs of farmers and others.

The learnings in the unit "Store Skills" should be practiced in this unit.

Student Goals

The teacher should cause his students to develop the necessary knowledge and abilities in fertilizers which will make them efficient in providing farmers and others with fertilizers and services (and using fertilizers themselves) which will meet their needs on an economical and most productive basis.

In setting out to deal with this unit, the teacher should cause each student to set goals similar to the following:

1. To know the importance of fertilizer
2. To be able to use soil test results to determine fertilizer and lime needs
3. To know the basic things to consider in making fertilizer and lime recommendations
4. To be able to recommend kinds and amounts of fertilizer and lime to farmers for specific crops
5. To be able to compute and explain the cost for a given fertilizer application

6. To be able to adjust fertilizer equipment to a specified rate and apply fertilizer
7. To be able to make on-farm contacts for studying fertilizer needs, making recommendations, and selling the user what he needs

Providing the Class Instruction

The series of problems used may be similar to the one listed here. However, the teacher should feel free to modify the list by adding or deleting based on the needs of the students.

1. How important is fertilizer in modern farming?
2. How take a soil sample?
3. How use the results of soil tests in determining fertilizers needs?
4. How determine the kind of fertilizer that should be used?
5. How determine the amount of fertilizer to apply in supplying a given amount of plant food?
6. What plant nutrients are most likely to limit crop yields?
7. How figure the cost of plant foods in a fertilizer?
8. What are the advantages of using high-quality fertilizers?
9. How should we lime our soil?
10. How compute the cost of a fertilizer order?
11. How determine the amount of fertilizer a spreader is set to handle?
12. How adjust a fertilizer spreader for specific amounts of fertilizers?
13. How evaluate a fertility program on a farm?
14. How determine the amount of nutrients needed to produce 100 bushels of corn? (Five tons of alfalfa)

Teaching Suggestions

The following teaching techniques and aids are suggested:

In learning #2 each student should take a soil sample and fill out a soil sample information sheet. The soil should, if possible, be tested in the county soil laboratory. If facilities are not available for testing, the samples should be sent to the College of Agriculture for testing. Each student should use the results of their soil test to work out the desired fertilizer program. Most likely a problem on how to take a soil sample should be dealt with two or three weeks before starting to deal with the fertilizer unit. This would give the students time to take samples and have the soil test made. If this is not done, use may be made of soil test results from previous years.

Students should be able to recognize the common hunger signs (symptoms) of plants in their area. This may be done by using actual plants or plant parts, drawings, and slides. The class might grow a common crop in pots filled with soil substitute media, one pot lacking nitrogen, one phosphorus, and another one potassium. One control pot should be supplied with all of the necessary nutrients. The plants should be observed to see if typical deficiency signs (symptoms) appear.

Students should realize that fertilizer may be dangerous if it is not handled and stored properly. Fertilizer caution or warning signs or labels may be collected and a display made in the classroom.

Samples of fertilizers and lime may be collected (can be put in small plastic bags) for students to examine.

Students should be familiar with the practices that are administered by the ASC committee. They should know the approved fertilizer rates for seeding of pasture. Having the office manager of the local ASC office meet with the class and explain the program should be most helpful.

The various types of fertilizer applicators should be brought to the school for students to learn their operation and how to adjust for the desired rate and placement of fertilizer. The needed equipment may be secured from local farmers and fertilizer dealers in the area.

Student Participation

Students should become familiar with the fertilizer materials sold by their training centers. They should prepare a list of fertilizers sold by their centers. The list should include names, analysis, form, use, price, and location. The list should be added to the student's information folder.

Students should practice in the classroom, making recommendations on:

-- Fertilizers to use for specific crops
-- When to apply
-- Amount to apply
-- Method of making application

Getting Decisions Made and Carried Out

The teacher should guide the students to arrive at sound conclusions to the problems dealt with in this unit. Sound conclusions, with clear understanding on the part of students, should do much to give students the confidence needed for success in selling fertilizer materials, and in rendering service.

The teacher should observe the students and check with the employers when making supervisory visits to help insure that students are developing the abilities needed to render service to customers and be effective workers in the businesses.

References

Books

*Commercial Fertilizers; Collins, (McGraw-Hill Book Co., Inc., New York -- 1955.)

Profitable Soil Management; Knuti, Korpi, and Hide, (Prentice-Hall, Inc., Englewood Cliffs, New Jersey -- 1962.)

Field Crops; Fergus and Hammonds, (J. B. Lippincott Company, Chicago, Illinois -- 1958.)

Farm Soils; Worthen and Aldrich, (John Wiley and Sons, New York -- 1956.)

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Managing Southern Soils; Vanderford, (John Wiley and Sons, New York -- 1957.)

Our Soils and Their Management; Donahue, Second Edition, (Interstate, Danville, Illinois -- 1961.)

*Agronomy Handbook; Agronomy Department, (University of Kentucky, Lexington -- 1961.)

Circulars and Leaflets

Kentucky Circular 468, Productive Soil
Kentucky Misc. 10, Fertilizers -- Their Purchase and Use on Field Crops
Kentucky Misc. 13-A, Soil Tests Results and Fertilizer Recommendations Sheet
Kentucky Misc. 59, Soil Sampling Instructions
Kentucky Misc. 60, Information Sheet -- Soil Sample
Kentucky Misc. 209-A, Know Your Fertilizer
Kentucky Leaflet 114-A, Phosphate Fertilizers
Kentucky Leaflet 171, What's in the Fertilizer Bag?
Kentucky Leaflet 182, Nitrogen Fertilizers
Kentucky Leaflet 185, Liquid Fertilizers
Kentucky Leaflet 187, Soil Testing
Kentucky Leaflet 223, Liming Acid Soil Pays
Kentucky Leaflet 249-A, Liming Acid Soils
Kentucky Leaflet 260-A, When No Soil Tests are Made
1966 ASC Handbook of Practices

Units (Department of Agricultural Education, University of Kentucky)

HS 8 -- Soils in Relation to Crops, 1962
HS 4 -- Using Fertilizers and Other Soil-Building Materials, 1965

REFERENCES ACCORDING TO LEARNINGS

1. To understand the importance of fertilizer in modern farming	*Agronomy Handbook, p. 24 Managing Southern Soils, Chapter 9 Profitable Soil Management, pp. 177-83

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*Teacher reference

	Farm Soils, p. 121 *Commercial Fertilizers, Chapter 17 (Selected Reference) Kentucky Circular 468, pp. 5-7 Kentucky Misc. 10 *Regulatory Bulletin 181, p. 6
2. To use soil tests to determine fertilizer and lime needs	*Agronomy Handbook, pp. 13-16 Profitable Soil Management, pp. 159-69 Farm Soils, pp. 150-154, 215-20 Managing Southern Soils, pp. 228-29 Soils, pp. 69-79 How to Get Good Soil Samples (American Potash Institute) Soil Sample Information Sheet Kentucky Misc. 10-A, p. 6 Kentucky Misc. 13-A Kentucky Misc. 50 Kentucky Misc. 59 Kentucky Leaflet 139
3. To understand the basic things to consider in making fertilizer and lime recommendations	Profitable Soil Management, Chapter 13 (Selected Reference) Farm Soils, pp. 149-70 Managing Southern Soils, Chapter 9 (Selected Reference) Soils, pp. 119-29 Field Crops, 448-52 Our Soils and Their Management, Chapter 6 (Selected Reference)
4. To recommend the kinds and amounts of fertilizer and lime to farmers for specific crops	Managing Southern Soils, pp. 223, 262-64 Farm Soils, Chapter 11 (Selected Reference) Field Crops, pp. 479-84 *Commercial Fertilizers, pp. 395-502 Our Soils and Their Management, Chapter 7 (Selected Reference)

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*Teacher reference

5. To compute and explain cost for a given fertilizer application	See references for learning #4
6. To adjust fertilizer equipment to a specified rate and apply fertilizer	Use equipment to demonstrate
7. To make on-farm contacts for studying fertilizer needs and making recommendations and sales	See references for learning #2, 3, and 4

RELATED MATERIALS

PRINCIPAL FERTILIZING MATERIALS

Supplying Nitrogen	Approximate Percent Nitrogen
Ammonium nitrate	33
Ammonium sulphate	20
Ammonium nitrate -- limestone mixtures	20
Monoammonium phosphate	11
Diammonium phosphate	21
Ammonium phosphate-sulfate	16
Sodium nitrate (nitrate of soda)	16
Urea	45
Calcium cyanamide	21
Calcium nitrate	16
Anhydrous ammonia	82
Nitrogen solutions	20 - 41
Organic products	1 - 12

Supply Phosphorus	Approximate Percent Phosphoric Acid (P_2O_5)
Normal superphosphate	18 - 20
Triple superphosphate	42 - 48
Monoammonium phosphate	48
Diammonium phosphate	53
Ammonium phosphate-sulfate	20

Supplying Potassium	Approximate Percent Potash (K_2O)
Muriate of potash	50 - 62
Sulfate of potash	48 - 52
Sulfate of potash-magnesia	21 - 22
Kainit	12 - 16
Manure salts (mine-run potash salts)	20 - 30

THE AMOUNT OF SELECTED LIMING MATERIALS NECESSARY FOR EQUIVALENT EFFECT IN NEUTRALIZING SOIL ACIDITY -- USING PULVERIZED LIMESTONE AS A STANDARD

	Percentage Finer Than 100-Mesh*	Tons of Materials For Necessary Equivalent Neutralizing Effect
Pulverized limestone	65-80	1
Limestone screenings	10-20	2
Coarse limestone meal	20-30	1.75
Fine limestone meal	30-40	1.75
Agricultural group limestone	40-60	1.1
Superfine limestone	85-95	0.9
High calcium hydrated limestone	---	0.66
High magnesium hydrated lime	---	0.5
Granular burnt lime	---	0.4

*Eighty percent of ground limestone should pass a 10-mesh screen with the "fines" left in for satisfactory liming material.

(1) Particles coarser than 10-mesh are essentially without value because of their extremely low solubility.

(2) Usually a ton of average marl is about equal to a ton of screenings in correcting soil acidity.

NUTRIENT CONTENT OF SELECTED CROPS*

Crop	Yield	Part of Crop	Nitrogen	Phosphorus P_2O_5	(P)	Potassium K_2O	(K)
Tobacco	1,500 lbs.	Leaves	55	10	(4)	80	(66)
		Stalks	25	10	(4)	35	(29)
		All	80	20	(8)	115	(95)
Corn	60 bu.	Grain	57	23	(10)	15	(12)
	2 tons	Stover	38	12	(5)	55	(46)
		All	95	35	(15)	70	(58)
Wheat	30 bu.	Grain	35	16	(7)	9	(7)
	1.25 tons	Straw	15	4	(2)	21	(17)
		All	50	20	(9)	30	(24)

*Commercial Fertilizers, Collins, pp. 470-471 and "Consider Plant-Food Content of Crops," Reprint from Better Crops with Plant Food, Magazine, p. 7

NUTRIENT CONTENT OF SELECTED CROPS (CONTINUED)

Crop	Yield	Part of Crop	Nitrogen	Phosphorus P_2O_5 - (P)	Potassium K_2O - (K)
Soybeans	25 bu.	Grain	110	35 (15)	40 (33)
	1.25 tons	Straw	15	5 (2)	20 (17)
		All	125	40 (17)	60 (50)
Alfalfa	3 tons	All	140	35 (15)	135 (112)
Sweet clover	5 tons	All	185	45 (20)	165 (137)
Red clover	2 tons	All	80	20 (9)	70 (58)
Lespedeza	3 tons	All	130	30 (13)	70 (58)
Timothy	1.5 tons	All	40	15 (6)	45 (37)

APPROXIMATE AMOUNTS OF NITROGEN, PHOSPHORUS, AND POTASSIUM AVAILABLE TO PLANTS FROM GREEN MANURE, CROP RESIDUES, AND MANURE

Crop Turned Under	Nitrogen	Pounds Per Acre Phosphoric Acid (P_2O_5)	Potash (K_2O)
Alfalfa-clover-grass mixture	60	30	60
Clover-grass mixture	30	15	30
Mostly grass	*15	5	10
Vetch alone	60	20	35
Half vetch and half small grain	25	15	30

*Turning under dry residues containing large amounts of carbonaceous material (mature non-legumes, straw, corn stalks) may result in a deficiency of nitrates for the crop unless additional nitrogen fertilizer is turned under with these materials for the bacteria which bring about the decay of organic matter. Usually 30 pounds of nitrogen should be turned under with each ton of straw or other carbonacious material to help in its decomposition.

Table continued on next page

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Fertilizing Material	Nitrogen	Pounds per Acre Phosphoric Acid (P_2O_5)	Potash (K_2O)
Fresh manure	6 (first year)	5	10
Weathered or open-lot manure	3 (first year)	2	5
Corn stalks	* 4	1	11
Wheat stalks	*10	3	12
Tobacco stalks	30	15	70

*Turning under dry residues containing large amounts of carbonaceous material (mature non-legumes, straw, corn stalks) may result in a deficiency of nitrates for the crop unless additional nitrogen fertilizer is turned under with these materials for the bacteria which bring about the decay of organic matter. Usually 30 pounds of nitrogen should be turned under each ton of straw or other carbonaceous material to help in its decomposition.

AVERAGE COMPOSITION OF ONE TON OF FRESH MANURE

Organic matter ------ 500 pounds
Nitrogen ------------ 10 pounds
Phosphoric acid------ 5 pounds
Potash -------------- 10 pounds

FORMS OF NITROGEN IN COMMON NITROGEN FERTILIZERS

Material	Percent			
	Ammonium Nitrogen	Nitrate Nitrogen	Volatile Ammonia Nitrogen	Total Nitrogen
Ammonium sulphate	20.6			20.6
Calcium cyanamid	*21.0			21.0
Urea	*42.0-45.0			42.0-45.0
Ammonium nitrate	16.75	16.75		33.5
Nitrate of soda		16.0		16.0
Anhydrous ammonia			82.0	82.0

*Really not ammonium or nitrate nitrogen, but when applied to the soil ammonium nitrogen is quickly formed.

When nitrate nitrogen is applied to the soil, it goes into solution and moves with the soil moisture. If rains are heavy and the movement of soil water is down, some of the nitrate nitrogen goes with it and is lost. If the season is dry and water moves up in the soil, nitrates move up also and are deposited near the surface by evaporation. These nitrates again become available for the plants to use when there is sufficient rainfall to carry them back into the root zone. Materials containing nitrate nitrogen should, therefore, be applied during or immediately before the growing season.

When ammonium nitrogen is applied to the soil, it goes into solution and is rapidly fixed by the clay particles until it is taken up by the growing plants, or it is changed to nitrate nitrogen by soil bacteria and is then subject to movement with soil water. This change to nitrate nitrogen occurs only when the soil is warm, moist, and well aerated. Therefore, ammonium nitrogen can be applied in the fall or early spring (when soil temperatures are 57 degrees F. or lower) without loss from leaching. Applications of ammonia nitrogen plowed under or placed at a depth of 4 to 6 inches would then be held in the root zone for the crop.

Volatile ammonia is subject to loss unless applied 4 to 6 inches below the surface of the soil and well covered. Under favorable soil physical conditions volatile ammonia forms may be applied with a plow attachment if completely covered under the furrow slice.

Agronomy Extension
The Ohio State University, 1954

UNIT: AGRICULTURAL CHEMICALS

Number of class periods ______________ Month(s) ______________________

Major objective to be attained through the unit: To develop understandings and abilities needed to render service to farmers (and others) in recommending, selling, and using agricultural chemicals. (The unit includes insecticides, fungicides, herbicides, rodenticides, nematocides, molluscicides, and drugs used to prevent and treat diseases of livestock. It does not include growth regulators.)

Learnings Needed to Reach the Objective

(The learnings should be changed to meet the needs of the students in the class and the types and kinds of chemicals sold in the agricultural-supply stores.)

1. To understand the importance of using agricultural chemicals in modern farming (including flowers, shrubs, garden plants, etc.)

   Annual loss to crops in the United States from plant insects and diseases is estimated at three billion dollars -- much of which can be controlled by proper use of appropriate agricultural chemicals.

   a. Decreased yield
   b. Lower quality of produce
   c. Reduction in growth and vigor of plants
   d. Death of plants

   Living organisms that cause diseases

   a. Bacteria (bacterial wilt in cucumbers, wildfire in tobacco, etc.)
   b. Fungi (mildews, smuts, rusts, molds, tomato blight, etc.)
   c. Viruses (tobacco mosaic, mosaic of clover, beans, cowpeas, etc.)
   d. Flowering plants (dodder)
   e. Insects and worms (sucking insects, biting insects, nematodes, etc.)
   f. Nutritional diseases

   Annual loss due to lack of weed control runs into millions of dollars.

   a. It is estimated that an average of $7 per acre of corn is lost due to weeds. Severe losses reach $30 to $40 per acre.
   b. Use of chemicals to control weeds results in increased yields and a lowered cultivation cost.
   c. Around-the-farm weed control means greater efficiency and safer and more pleasant working conditions.
   d. Use chemicals for control whenever weeds are unsightly, are a severe source of weed seed, or when they create hazardous working conditions:

      -- Along fence rows
      -- In barnyards and around farm buildings
      -- In roadways and driveways
      -- In storage areas for oil or gasoline

-- In parking areas for machinery
-- Around field lots and grain storage areas

Economic losses from death of farm animals (or reduced production) due to parasites and diseases are estimated at a billion dollars annually.

a. External parasites alone amount to a 400 million-dollar loss in cows and calves, and a 250 million in loss of milk.
b. Cattle grubs, screw worms, flies, and ticks result in 235 million-dollar loss annually.
c. Internal parasites in cattle cost farmers up to 40 million dollars each year.
d. The most important aspect of disease control is prevention.
e. An effective livestock insect and disease control will pay big dividends.

2. To know the common agricultural chemicals harmful to handle or breathe

a. Insecticides
b. Fungicides
c. Herbicides
d. Rodenticides
e. Molluscicides
f. Nematocides

3. To know the safety precautions to follow in selling and using agricultural chemicals

Many agricultural chemicals are toxic in varying degrees

a. With new agricultural chemicals, labels are more important than ever before.
b. Many new chemicals are dangerous to handle.
c. Watch for broken containers; leave no containers open.
d. Make sure children cannot open containers
e. Caution customers about the dangers involved.

Four key rules for safe use of agricultural chemicals

a. Read the label
b. Store materials in a safe place
c. Apply with care
d. Carefully dispose of empty containers

4. To properly handle leaky or broken containers

5. To understand the importance of following the manufacturer's instructions for mixing and applying

Agricultural chemicals are tested before they are put on the market

To use less than the recommended amount, the results are not likely to be satisfactory

To use more than the recommended amount may produce very harmful effects

Therefore, it is important to:

a. Mix materials according to instructions
b. Apply materials according to instructions

6. To know the requirements for a good pest-control program

Four principles govern any successful pest-control program

a. Timeliness -- the spray or dust must be on plants or animals at the proper time
b. Thoroughness -- all parts of the animal or plant that are subject to attack must be covered
c. Good equipment -- the right kind of spray tank or dust gun must be used
d. Proper materials -- the pest must be known before the correct materials to use can be determined

7. To recognize the common insects and diseases of plants and the kinds (or types) of damage produced by each

a. Sucking insects (aphids, stinkbugs, chinch bugs, white flies, scale insects, and leaf hoppers)
b. Chewing insects (caterpillars, beetles, slugs, and worms)
c. Disease (scab, wildfire, mildews, rusts, mosaics, molds, and smuts)

-- Successful control of the great majority of plant diseases rests largely on prevention, by applying protective chemical coating over leaves and stems

8. To recognize the common weeds of field crops, garden crops, and lawns

Definition of a weed

Classification of weeds into:

a. Annuals

-- Summer Annuals
-- Winter Annuals

b. Perennials
c. Biennials

Characteristics of various weeds

a. Shape
b. Color
c. Growth pattern
d. Method of reproduction

Environmental conditions necessary for the various weeds

a. Type soil

    b. Moisture conditions
    c. Temperature
    d. Light conditions

Crops normally affected by various weeds

9. To recognize (be familiar with) the harmful effects of the common:

    a. Insects of farm animals
    b. Internal parasites of farm animals
    c. Diseases of farm animals

10. To know the general rules (principles) of chemical control of insects, diseases in plants, parasites of livestock, diseases of livestock, weeds, and rodents

    a. Identify the insect, diseases, parasite, weed, or rodent
    b. Select the material(s) to use
    c. Mix the materials
    d. Apply the materials
    e. Follow the safety precautions

11. To use charts, catalogs, and other publications and instructions on containers of agricultural chemicals in making recommendations to farmers on:

Controlling insects on plants

    a. Field corn, sorghum, and small grain
    b. Alfalfa, clover, and soybeans
    c. Tobacco in the plant bed
    d. Tobacco in the field
    e. Garden plants
    f. Flowers, shrubs, and trees

Controlling diseases on crops

    a. Tobacco
    b. Other crops

Controlling weeds in crops

    a. Corn
    b. Soybeans
    c. Strawberries
    d. Other crops

Controlling insects (parasites) on animals

    a. Beef and non-lactating dairy cows
    b. Lactating dairy cows
    c. Hogs
    d. Sheep
    e. Poultry

Controlling internal parasites of animals

   a. Beef and dairy
   b. Hogs
   c. Sheep
   d. Poultry

Controlling diseases of animals

   a. Beef and dairy
   b. Hogs
   c. Sheep
   d. Poultry

12. To use spray compatibility chart(s) in determining what agricultural chemicals can be safely mixed

    a. Antibiotics are most effective when used alone.
    b. Nutrient sprays should be applied separately unless compatibility is known.
    c. When in doubt, use spray compatibility chart in making recommendations or in answering questions regarding mixing different agricultural chemicals.

13. To calculate insecticide dilutions and dosages

    a. Figure the percent of insecticide in a spray mixture
    b. Figure the pounds of wettable powder needed to mix a spray containing a given percent of active ingredient
    c. Figure the gallons of emulsifiable concentrate needed to mix a spray containing a given percentage of active ingredient

SUGGESTIONS FOR HANDLING THE UNIT

Introducing the Unit

The field of agricultural chemicals is big and complex. There are many types and forms of chemicals on the market to combat diseases of plants and animals, internal and external parasites of animals, and to regulate growth of animals and plants. Many of the chemicals are poisonous to humans, therefore, extreme caution must be taken in mixing and applying.

It is not possible for the teacher in dealing with the unit to make his students highly competent in using and recommending agricultural chemicals. Students should realize that they will not be expected to be experts on agricultural chemicals. This unit should prepare students to make recommendations and sell chemicals for general use. It is important for the teacher to develop an understanding on the part of his students of the tremendous savings that will accrue to farmers through the proper use of agricultural chemicals in their farming operations and for home and garden use. It is also important that the students learn to read and interpret the labels on containers in determining the chemicals to recommend for specific needs. Likewise, it is most important for students to learn the safety precautions to be taken in the use of the various kinds of agricultural chemicals.

Student Goals

Students should be led to set goals in terms of procedures to follow in analyzing a given situation -- to recognize the weed, insect, disease, etc. as a basis for determining the chemicals to use and how to apply.

In setting out to deal with this unit, the teacher should cause each student to set goals similar to the following:

1. To know the importance of using agricultural chemicals in modern farming
2. To know the safety precautions to follow in selling and using agricultural chemicals
3. To know the requirements for a good pest-control program
4. To recognize insects and diseases of plants and the kinds of damage they do
5. To recognize weeds of field crops, garden crops, and lawns
6. To recognize insects, parasites, and diseases of livestock and the kinds of damage they do
7. To know how to control insects of plants and livestock, diseases of plants and livestock, parasites of livestock, weeds in crops and lawns, and rodents on the farm
8. To know chemicals that are compatible
9. To mix chemicals in the correct proportions

Providing the Class Instruction

The following lessons are suggested in dealing with the unit. The teacher should feel free to deal with the unit in greater depth should he choose.

1. How important is the use of agricultural chemicals in modern farming (and gardening and horticulture)?
2. What are the major (or common) agricultural chemicals that are harmful to handle or breathe?
3. What are the safety precautions that one should follow in selling and using agricultural chemicals?
4. What procedure should one follow in handling broken or leaky containers found in the store or at home?
5. How important is it to follow the manufacturer's instructions for mixing and applying agricultural chemicals?
6. What are the requirements for a good pest-control program?
7. Practical work exercise dealing with identifying insects and diseases of plants and the kinds of damage they do.
8. Practical work exercise dealing with identifying weeds of field crops, garden crops, and lawns.
9. What kinds of damage do the various insects do to farm animals?
10. What kinds of damage do various internal parasites do to farm animals?
11. What kinds of damage do various diseases do to farm animals?
12. What are the general rules (principles) for chemical control of insects, diseases in plants, parasites of livestock, diseases of livestock, weeds, and rodents?
13. What materials are recommended for controlling various insects on plants?

14. What materials are recommended for controlling various diseases on plants?
15. What chemicals are recommended for control of weeds in corn? other crops?
16. What materials are recommended for controlling insects on beef and non-lactating dairy cows? on milking dairy cows?
17. What materials are recommended for controlling various insects on hogs? sheep? poultry?
18. What chemicals are recommended for controlling various internal parasites of beef and dairy animals?
19. What chemicals are recommended for controlling various internal parasites of hogs? sheep? poultry?
20. What chemicals are recommended for controlling various diseases of beef and dairy animals?
21. What chemicals are recommended for controlling various diseases of hogs? sheep? poultry?
22. Practical work exercise in the use of Spray Compatibility Chart to determine chemicals that are compatible and those that are not.
23. What percent rotenone is in a spray where one pound of 5% rotenone (wettable powder) is mixed with 10 gallons of water?
24. How many pounds of 25 percent Co-Ral (wettable powder) is needed to make 25 gallons of spray containing 12½% Co-Ral?
25. How much pyrethrin (emulsifiable concentrate) is needed to make 10 gallons of spray containing 15% pyrethrin?

Teaching Suggestions

The following teaching techniques and aids are suggested:

Students should not attempt to memorize a long list of specific chemicals and applications. They should never guess. They should always refer to folders, charts, and labels on chemicals. If they are not sure of the chemical to use, they should ask the person in charge of chemicals.

Students should learn the important definitions pertaining to agricultural chemicals. (See pages 198-201)

Field trips should be helpful when dealing with the identification of weeds, insects, and diseases, and the types of damage they do to plants and livestock.

The use of important seasonal chemicals should be reviewed with the class at the appropriate time.

Student Participation

Students should practice making recommendations using "role playing." Have each student, in turn, serve as store salesman and one as customer. Charts and chemicals should be available so that the students may refer to the charts and labels on the chemicals to aid in making recommendations.

Students should prepare folders on the recommended pesticides for weeds, insects, and diseases. The folders should be kept in the training centers for reference.

Students should practice assembling and using the various types of sprayers and dusters.

Getting Decisions Made and Carried Out

The teacher should lead the students to arrive at sound conclusions to the problems dealt with in this unit. Sound conclusions, with clear understandings, will do much to assure that students will be effective salesmen.

The teacher should observe the students and check with the employers when making supervisory visits to help insure that the students are developing the abilities needed to render service to farmers (and others) in recommending and using agricultural chemicals.

References

Books

Agricultural Chemicals; (What they are/ How they are used); Manufacturing Chemists' Association, Inc., 1825 Connecticut Avenue, N. W., Washington, D. C.

Animal Diseases; Yearbook of Agriculture, (USDA -- 1956.)

Animal Sanitation and Disease Control; Dykstra, (The Interstate, Danville, Illinois -- 1961.)

Animal Science; Ensminger, (The Interstate, Danville, Illinois -- 1960.)

Dairy Farming; Peterson and Field, (J. B. Lippincott Co., Chicago -- 1953.)

Dairy Production; Diggins and Bundy, (Prentice-Hall, Inc. -- 1961.)

Field Crops; Hammonds and Fergus, (J. B. Lippincott Co., Chicago -- 1958.)

Growing Field Crops; Dungan and Ross, (McGraw-Hill Book Company, Inc., New York -- 1957.)

Insects; Yearbook of Agriculture (USDA -- 1952.)

Plant Diseases; Yearbook of Agriculture (USDA -- 1953.)

Veterinary Guide; Third Edition, Stamm and Bruch, (Windsor Press, Chicago -- 1957.)

Circulars, Miscellaneous, and Leaflets

Kentucky Circular 521-B, Sprays for Home Fruit Plantings
Kentucky Circular 544-C, Spray Schedules for Commercial Fruit Plantings

Kentucky Circular 546-B, Tobacco Plant Bed Management
Kentucky Circular 577-A, Common Lawn Weeds
Kentucky Misc. 71-E, Strawberry Insect and Disease Control - 1966
Kentucky Misc. 113-E, Chemical Control of Weeds in Farm Crops in Kentucky - 1966
Kentucky Misc. 151, Controlling Insects on Commercial Vegetables and Sweet Corn
Kentucky Misc. 251-D, Insecticide Recommendations for Tobacco Beds - 1966
Kentucky Misc. 256-D, Insecticide Recommendations for Lactating Dairy Animals - 1966
Kentucky Misc. 258, Controlling Insects on Sheep
Kentucky Misc. 260, Controlling Insects on Poultry
Kentucky Misc. 261-A, Insecticide Recommendations for Swine - 1966
Kentucky Misc. 263, Black Spot on Roses
Kentucky Misc. 264, Powdery Mildew Diseases of Flowering Plants
Kentucky Misc. 265, Dormant Spray for Peach Leaf Curl
Kentucky Misc. 266, Black Rot of Grape
Kentucky Misc. 270-D, Insecticide Recommendations, Dilution Chart for Tobacco Fields - 1966
Kentucky Misc. 278-C, Insecticide Recommendations for Field Corn, Small Grains, Grain Sorghum, and Bluegrass - 1966
Kentucky Misc. 279-C, Insecticide Recommendations for Alfalfa, Clover, and Soybeans - 1966
Kentucky Misc. 280-C, Insecticide Recommendations for Beef Animals - 1966
Kentucky Misc. 286-C, Insecticide Recommendations for the Home Garden - 1966
Kentucky Misc. 324-A, Alfalfa Weevil Control for 1966
Kentucky Misc. 332-A, 1966 - Weed Control for Established Bluegrass Turf
Kentucky Misc. 335, Protect Yourself When Using Insecticides
Kentucky Leaflet 132, Controlling Giant Foxtail
Kentucky Leaflet 146, Sheep Tapeworms
Kentucky Leaflet 151, Control of Wild Garlic With 2, 4-D
Kentucky Leaflet 192, Wipe Out Brucellosis
Kentucky Leaflet 226, Spittlebug Control
Kentucky Leaflet 227, Nodding Thistle Control With 2, 4-D
Kentucky Leaflet 236, Prevention and Control of Insects in Stored Grain
Kentucky Leaflet 274-B, Chemical Weed Control for Fruit Crops

Units (Department of Agricultural Education, University of Kentucky)

HS 36 -- Keeping Livestock Healthy, 1960
HS 45 -- Beef Production, 1961
HS 50 -- Controlling Parasites and Diseases in Dairy, 1960

Other

USDA Bulletin 46 -- Insects and Diseases of Vegetables in the Home Garden
Spray Compatibility Charts; Tobacco States Chemical Co., Inc. (P. O. Box 479, Lexington, Kentucky)
"Grow Corn Without Weeds and Grasses;" Geigy Agricultural Chemicals (Saw Mill River Road, Ardsley, New York)
"Weed Control in Corn and Around-the-farm;" (Chart) Geigy Agricultural Chemicals
"Handbook of the Insect World;" Hercules Powder Company, (Wilmington, Delaware)

Specimens

Specimens of insects, insect damage, weeds, and diseased plants may be secured from Nasco, Fort Atkinson, Wisconsin 53538

REFERENCES ACCORDING TO LEARNINGS

Note: Learning #9 is broken down into three parts and learning #11 is broken down into six parts for listing of references. References in many cases cover several pages. The teacher will need to narrow these down to meet the need of the specific area he is dealing with. It is suggested that the teacher write in additional references which he uses, for each learning, as he teaches this unit. Space is provided for writing in references.

1. To understand the importance of using agricultural chemicals in modern farming	Agricultural Chemicals, pp. 9-10, 12 Dairy Production, pp. 108-10 Insects, pp. 141-44 Plant Diseases, pp. 1-3 Kentucky Leaflet 192, p. 2 Unit: Keeping Livestock Healthy, learning #1 and charts, p. 14 Unit: Controlling Parasites and Diseases in Dairy, content under learning #2 "Grow Corn Without Weeds and Grasses" p. 1
2. To know the common agricultural chemicals harmful to handle or breathe	USDA Bulletin 46, p. 8 Samples of poisonous chemicals -- read and study labels
3. To know the safety precautions to follow in selling and using agricultural chemicals	Insects, pp. 271-75 Agricultural Chemicals, pp. 54-56 USDA Bulletin 46, p. 8 Kentucky Circular 544-C, pp. 3-6 Kentucky Misc. 335 Samples of poisonous chemicals -- read and study the labels Content under learning #3, this unit

4. To properly handle leaky or broken containers	Kentucky Misc. 335 Samples of poisonous chemicals -- instructions on labels Content under learning #3, this unit
5. To understand the importance of following the manufacturer's instructions for mixing and applying	Insects, pp. 248-49 Agricultural Chemicals, pp. 54, 56 Samples of agricultural chemicals, read and study manufacturers' instructions on the labels Content under learning #5, this unit
6. To know the requirements for a good pest-control program	Dairy Production, pp. 254-55 Dairy Farming, pp. 421-24 Content under learning #6, this unit
7. To recognize the common insects and diseases of plants and the kinds of damage produced by each	Insects, pp. 780-820 Plant Diseases, pp. 941-69 Field Crops, pp. 430-434 Growing Field Crops, Chapter 11 "Handbook of the Insect World" USDA Bulletin No. 46 Specimens
8. To recognize the common weeds of field crops, garden crops, and lawns	Kentucky Circular 577-A, pp. 8-39 Chart by Geigy; "Weed Control in Corn and Around-the-farm" Specimens
9.a. To recognize the harmful effects of common insects of farm animals	Veterinary Guide, appropriate pages
9.b. To recognize the harmful effects of common parasites of farm animals	Animal Diseases, appropriate pages Dairy Production, pp. 254-61 Veterinary Guide, appropriate pages

9.c. To recognize the harmful effects of the common diseases of farm animals	Animal Diseases, appropriate pages Dairy Farming, pp. 424-44 Dairy Production, pp. 261-75 Veterinary Guide, appropriate pages
10. To know the general rules (principles) for chemical control of insects and diseases in plants . . .	Insects, pp. 248-49, 271 Kentucky Circular 521-B, 3-7 Content under learning #10, this unit
11.a. To use charts, catalogs, and other publications in making recommendations on controlling insects on plants	Insects, pp. 469-71 Kentucky Circular 521-B, pp. 8-12 Kentucky Circular 544-C, pp. 11-22 Kentucky Circular 546-B, pp. 18-21 Kentucky Misc. 71-E, 151, 251, 270-D, 278-C, 279-C, 286-C, 324-A Kentucky Leaflet 226, 236 Samples of agricultural chemicals sold in local stores -- recommendations on labels
11.b. To use charts, catalogs, and other publications in making recommendations for controlling diseases in crops	Field Crops, pp. 150-55 Plant Diseases, pp. 134-46 Kentucky Circular 521-B, pp. 8-12 Kentucky Circular 544-C, pp. 23-33 Kentucky Circular 546-B, pp. 12-14 Kentucky Misc. 71-E, 263, 264, 265, and 266 Samples of agricultural chemicals sold in local stores -- recommendations on labels
11.c. To use charts, catalogs, and other publications in making recommendations for control of weeds in crops	Kentucky Circular 546-B, pp. 4-9 Kentucky Misc. 113-E, 332-A Kentucky Leaflet 132, 151, 227, 274-B Sample charts and actual agricultural chemicals sold in local stores -- recommendations on labels

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11.d. To use charts, catalogs, and other publications in making recommendations for controlling external parasites on animals	Kentucky Misc. 256-D, 258, 260, 261-A, and 280-C Unit: Controlling Parasites and Diseases in Dairy Cattle, charts pp. 10-11 Unit: Beef Production, table, pp. 22-23 Sample charts and agricultural chemicals sold in local stores -- recommendations on labels
11.e. To use charts, catalogs, and other publications in making recommendations for controlling internal parasites of animals	Animal Sanitation and Disease Control, pp. 663-696 Unit: Controlling Parasites and Diseases in Dairy Cattle, charts, p. 10 Sample charts and agricultural chemicals sold in local stores -- recommendations on labels
11.f. To use charts, catalogs, and other publications in making recommendations for controlling diseases of animals	Animal Sanitation and Disease Control, appropriate pages Animal Science, pp. 214-19 Veterinary Guide, pp. 203-04, 210, 212 Kentucky Leaflet 192 Unit: Beef Production, tables, pp. 24-25 Sample charts and agricultural chemicals sold in local stores -- recommendations on labels
12. To use spray compatibility charts in determining what agricultural chemicals can be safely mixed	Kentucky Circular 544-C, p. 55 Spray Compatibility Charts
13. To calculate insecticide dilutions and dosages	Kentucky Misc. 258, 260, and 261-A

RELATED MATERIALS

DEFINITIONS -- CHEMICAL TERMS

1. Annual--a plant that completes its life cycle in one year. (Germinates from seed, produces seed, and dies in the same season.)

2. Attractant--agricultural chemical which lures insects, rodents, or other pests to selected locations where they are sterilized or destroyed.

3. Band or row application--an application to a continuous restricted area such as on a crop row rather than over the entire field.

4. Biennial--a plant that completes its life cycle in two years. The first year it produces leaves and stores food. The second year it blossoms and produces fruits and seeds.

5. Blanket or broadcast application--an application of spray over an entire area or field rather than only on rows, beds, middles, or individual plants.

6. Broad-leaved plants--in general, opposed to grass-like plants.

7. Carrier--the liquid or solid material added to a chemical or formulation to facilitate its preparation, storage, shipment, or use in the field.

8. Chemical sterilants--steroid or other types of chemicals which control insect pests by destroying their ability to reproduce.

9. Compatible--two compounds or products are said to be compatible when they can be mixed without affecting each other's performance.

10. Concentrate--opposite of dilute. Usually concentrated formulations are diluted with water or oil before use. Also, in a product name, concentrate means highest strength formulation of the active ingredient commercially available.

11. Concentration--refers to amount of active material in a given weight of a mixture or volume of a solution. Recommendations and specifications for concentration of agricultural chemicals are frequently given on the basis of pounds per unit volume of mixture or solution.

12. Contact herbicide--one that kills primarily by contact with plant tissue rather than as a result of translocation. Only that portion of a plant contacted is directly affected. Young seedlings are killed, but perennials may recover, from the uninjured parts below ground.

13. Contact insecticide--pesticide which kills an insect pest which touches it or is touched by it.

14. Deciduous--indicates plants which lose their leaves during the winter.

15. Defoliant--chemical used to make leaves fall from plants to facilitate harvesting.

16. Delayed action--as opposed to immediate effect. With some herbicidal chemicals (2, 4-D) delayed response is expected. Considerable time may elapse before maximum effects can be observed. Usually treated plants stop developing soon after treatment, then gradually die.

17. Desiccant--chemical used to accelerate the drying of plant tissue to facilitate harvesting.

18. Diluent--any liquid or solid material serving to dilute or carry an active ingredient or formulation.

19. Dinitro--a common designation for dinitro-o-secondary butyl phenol, a post-emergence weed killer.

20. Directed application--an application of spray or dust to a restricted area such as a row, or bed at base of plants. Such an application is useful where weeds can be contacted without getting the spray or dust on the crop plants.

21. Dissolve--usually refers to getting solids into solution. Complete solution is necessary for uniform results.

22. Drought--refers to dryness, particularly of soil, due to lack of rain. Under dry soil or drought conditions, response of plants or herbicides may be slow or poor. Best results with most weed killers will be achieved under favorable soil moisture conditions.

23. Emergence--the act of the germinating seedling breaking through the soil surface. This often is a preferred stage for selective herbicide application, with chemicals such as 2, 4-D, and dinitro.

24. Emulsifying agent--a material which helps to suspend globules of one liquid in another, i.e., oil in water.

25. Emulsion--a mixture in which one liquid is suspended in minute globules in another liquid; for example, milk or an oily preparation in water.

26. Fumigation--the use of chemicals in the form of a gas to destroy noxious insects, nematodes, and unwanted plants. Fumigation is used in storage areas, under special fumigation tents in the field, or in direct application to the soil.

27. Fungicide--chemical used to protect plants from fungus infection or to cure fungus infection.

28. Germination--process of germinating or beginning of vegetative growth. Often refers to the beginning of growth from a seed.

29. Herbaceous--a plant that remains soft or succulent and does not develop woody tissue.

30. Herbicide--a phytotoxic chemical used for killing or inhibiting (stunting) the development or growth of plants.

31. Humidity--refers to moisture or dampness in the air. Weed killers often are comparatively more effective under moderately humid conditions. In areas or at times when humidity is very low, higher herbicidal rates may be required, because sprays dry more quickly and absorption is poorer.

32. Inhibit--to hold in check or stop, i.e., to inhibit or check seed germination or plant growth with herbicides.

33. Insecticide--chemical used to control insect pests.

34. Leach--usually refers to movement of water through a soil, which may move soluble plant foods or other chemicals.

35. Molluscicide--pesticide used to control snails and slugs.

36. Nematocide--chemical used to control nematodes.

37. Nonselective herbicides--chemicals or formulations which destroy or prevent plant life in general without regard to species.

38. Noxious weed--a weed arbitrarily defined by law as being especially undesirable, troublesome, or difficult to control.

39. Perennial--a plant that continues to live from year to year. In many cases, in cold climates, the tops die down but the roots and rhizomes persist.

40. Pesticide--any substance or mixture of substances intended for controlling insects, rodents, fungi, weeds, and other forms of plant or animal life that are considered to be pests.

41. Phytotoxic--poisonous or injurious to plants.

42. Post-emergence treatment--treatment made after plants emerge above the soil surface.

43. Pre-emergence treatment--treatment made before plants emerge above the soil surface.

44. Rate or dosage--rate usually refers to the amount of active ingredient material applied to a unit area (such as one acre) regardless of percentage of chemical in the carrier.

45. Repellent--chemical which drives insects or other pests away from treated person, animal, object, or area.

46. Residual--to have continued killing effect over a period of time.

47. Resistant--same meaning as tolerant. Resistance of weeds determines the rates of weed killer application required for control.

48. Rodenticide--pesticide used to kill rodents.

49. Selective herbicide--one which has more toxic action on some species of plants than on others.

50. Soil persistence--refers to the length of time that a herbicide application on or in soil remains effective.

51. Spot treatment--application of sprays to localized or restricted areas as differentiated from overall, broadcast, or complete coverage.

52. Spray drift--the movement of airborne spray particles from the intended contact area to other areas.

53. Suspension--a liquid or gas in which very fine solid particles are dispersed, but not dissolved.

54. Stomach insecticide--pesticide which destroys an insect that ingests it.

55. Stunting--in relation to weeds or crop plants, usually refers to a retarding effect on growth and development. Often stunting of weeds or grasses, even without kill, may give effective commercial control.

56. Systemic insecticide--pesticide which is absorbed into the plant or animal to be protected in order to control the attacking pest.

57. Tolerance--the amount of chemical allowed by law to be in or on the plant or animal product when sold for food or feed use.

58. Tolerant--capable of withstanding effects. For example: tobacco is tolerant of Enide to the extent that this herbicide can be used selectively to control weeds without killing the tobacco.

59. Toxicity--degree to which a given substance is injurious to a particular species of plant or animal.

60. Weed--a plant that grows where it is not wanted.

61. Wettable powder--a powder that will form a suspension readily in water.

62. Winter annual--a plant from autumn -- germinated seed which blooms, fruits, and dies the following spring or early summer.

63. Zero tolerance--a pesticide has a zero tolerance when no detectable residue whatever of that pesticide is allowable on the harvested crop.

PRE-TEST: AGRICULTURAL MATHEMATICS

(What calculations can you make?)

Instructions: Make your calculations in the space below each problem and place your answer in the space provided.

1. a. If Pete borrows $1,200 on a discounted loan at 6 percent, how much money will he actually have the use of?

   Answer: ________

   b. How much interest will John pay on $1,200 loan for a year where the interest charged is 6 percent?

   Answer: ________

2. a. How many bushels of Korean lespedeza seed does a farmer need to sow 32 acres if he is to sow 12 pounds per acre? (45 pounds per bushel)

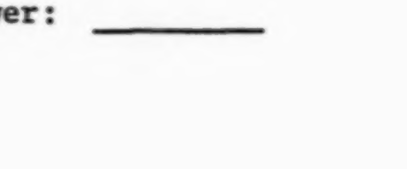
   Answer: ________

   b. What will be his total cost for seed if the lespedeza seed sells for $7.00 per bushel?

   Answer: ________

3. How many square feet of roofing are required for this roof?

   Answer: ________

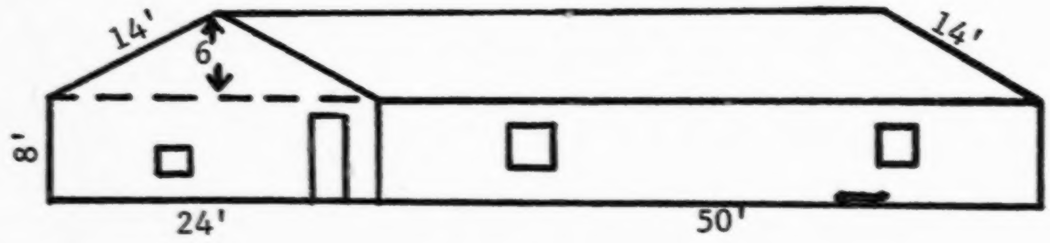


4. How much will the materials cost for the roof if roofing sells for $6.50 per 100 square feet and 8 pounds of nails are needed selling for 12 cents per pound?

   Answer: ________

5. How many gallons of paint are needed for this shed, giving it two coats? (A gallon of paint will cover 300 square feet. The roof is not to be painted -- do not deduct door or window space, as window frames, the door, and the door facings are to be painted.

Answer: ________



6. At $12.50 per yard of concrete, what will it cost to pave a machinery area 40 feet wide x 60 feet long x 4 inches thick?

Answer: ________

7. How many board feet are there in the following bill of lumber?

Answer: ________

24 pieces 2" x 4" x 12'
10 pieces 1" x 8" x 10'

8. Figure the total cost of the following bill of farm supplies, less 10% for cash sale and charging 3% sales tax.

Answer: ________

90 pounds of alfalfa seed @ 90¢ pound
3 cans of inoculant @ $1.25 each
45 pounds of bluegrass seed @ 80¢ pound

9. Mr. Botkins disposed of 750 bushels of soybeans through a local cooperative association at $1.80 a bushel. Transportation charges amounted to $12.75 and the association charged him $16.50 in storage fees. What was Mr. Botkins' net receipt for his soybeans?

Answer: ________

10. A farmer sold 640 bushels of soybeans through a cooperative grain-selling association. If he received an intial payment of $1.20 per bushel and a final payment of 86½ cents per bushel, what was the entire amount received for his soybeans?

Answer: ________

11. A cooperative marketing organization paid a cash dividend of 7½ percent to its members on the produce marketed during the year. If Mr. Skinner received $4,378 as the sale price of his produce, what was the amount of his dividend?

Answer: ________

12. Through his membership in a cooperative association, Mr. Land bought 8,400 pounds of feed at $46 per ton. At the end of the year he received a dividend of $20.96. What was the net cost of feed per 100 pounds?

Answer: ________

13. a. What is the selling price of a $2.50 item with a 30 percent mark-up?

Answer: ________

b. What is the percent mark-up of a $3.50 item that sells for $5.10?

Answer: ________

14. How many bushels of snapped corn will a crib 8 feet x 8 feet x 20 feet hold? (A bushel will take up 3½ cubic feet.)

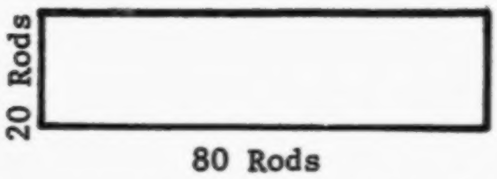
Answer: ________

15. The silo on Mr. Russell's farm is 14 feet in diameter and 34 feet hig
(inside measurements). How many cubic feet are in the silo?

Answer: ________

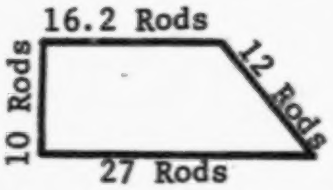
16. How many acres in this field? (160 square rods = 1 acre)

Answer: ________



17. How many acres in this field? (160 square rods = 1 acre)

Answer: ________



18. John had 10 acres of corn, it sold for $1.20 per bushel, his receipts were $952.00. What was his yield per acre?

Answer: ________

19. Figure the cost of 100 pounds of this ration when ground ear corn is selling for $1.25 bushel and tankage at $5.00 per cwt.

Answer: ________

ground corn	465 pounds
tankage	35 pounds

20. How many pounds of digestible protein are in this ration?

Answer: ________

	D. P. Percent
30# corn - - - - - - - - - - - -	6.6
60# oats - - - - - - - - - - - -	8.5
10# wheat bran - - - - - - - - -	13.6

21. If muriate of potash (50% K_2O) is selling for $60.00 per ton, what is the cost per pound of K_2O?

Answer: ________

22. A certain grade of fertilizer costs $55.00 per ton. If 800 pounds of this fertilizer are used on one acre, what will be the cost of fertilizing a field 120 rods by 90 rods? (160 square rods in an acre)

Answer: ________

23. a. When 20 pounds of a complete fertilizer (such as 5-10-5, 6-10-4, or 5-10-10) are recommended for 1,000 square feet of lawn, how many pounds of fertilizer are needed for an area 85 x 100 feet?

Answer: ________

b. When 3 pounds of fertilizer are recommended for 100 square feet of plant bed -- how many pounds of fertilizer are needed for 400 feet of bed, 12 feet wide?

Answer: ________

24. How many pounds of 25% Co-Ral (wettable powder) are needed to make 50 gallons of spray containing 0.12½% Co-Ral?

Answer: ________

25. How many pounds of 5% rotenone (wettable powder) are needed to make 100 gallons of spray containing 0.05% rotenone?

Answer: ________

POST-TEST: AGRICULTURAL MATHEMATICS

(What calculations can you make now?)

Instructions: Make your calculations in the space provided below each problem. Place your answer on the line provided.

1. Name four important reasons why you think it is important to make accurate mathematical calculations as an employee in an agricultural business.

____

____

____

____

2. a. If Mr. Jones borrows $1,300 on a discounted loan at 6 percent, how much money will he actually have the use of?

Answer: _________

b. How much interest will Pete have to pay on a $1,400 loan for a year where the interest charged is 5 percent?

Answer: _________

3. How many board feet are in the following bill of materials?

Answer: _________

12 pcs	2" x 4" x 8'
6 pcs	1" x 6" x 12'
10 pcs	1" x 10" x 10'

4. a. How many bushels of alfalfa seed does a farmer need to sow 10 acres if he is to sow 12 pounds per acre? (60 pounds per bushel)

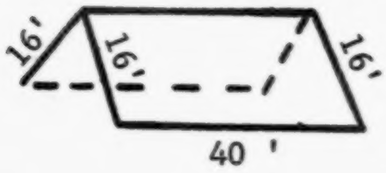
Answer: _________

b. What will be his total cost for seed if the alfalfa seed sells for $47.00 per bushel?

Answer: _________

5. How many square feet of roofing are required for this roof?

Answer: ________



6. How much will the materials cost for the roof if roofing sells for $8.50 per 100 square feet and 12 pounds of nails are needed selling for 15 cents per pound?

Answer: ________

7. How many yards of concrete will be required to pave an area 60 feet long x 40 feet wide x 6 inches thick?

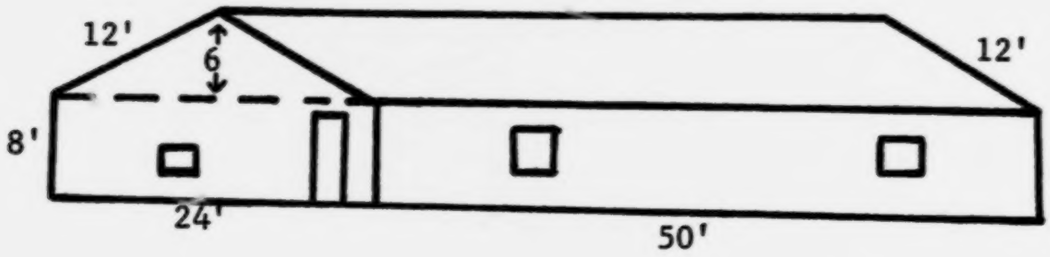
Answer: ________

8. What will the concrete cost for the job be if ready-mixed concrete sells for $12.50 per yard. (Figure cost on nearest ½ yard above what is needed.)

Answer: ________

9. a. How many gallons of paint are needed for this building, giving it two coats? (A gallon of paint will cover 250 square feet. The roof is not to be painted--do not deduct door or window space, as window frames, the door, and the door facings are to be painted.)

Answer: ________

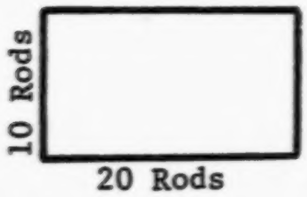


b. How much will the paint cost for the building if it sells for $5.50 per gallon? Figure in whole gallons?

Answer: ________

10. How much will the wire and posts cost to fence this field, if woven wire fence is $2.10 per rod, steel posts $1.00 each (using a steel post to each rod) and using four corner-post rigs at $3.50 each?

Answer: ________



11. Figure the total cost of the following bill of farm supplies, less 2% for cash sale and charging 3% sales tax.

Answer: ________

60 pounds of alfalfa seed @ 90¢ pound
2 cans of inoculant @ $1.25 each
30 pounds of bluegrass seed @ 80¢ pound

12. Mr. Williams disposed of 410 bushels of soybeans through a local cooperative association at $2.30 per bushel. Transportation charges amounted to $36.75 and the association charged 3 cents per bushel for storage fees. What was Mr. Williams' net receipt for his soybeans?

Answer: ________

13. Mr. Wallace sold 765 bushels of soybeans through a cooperative. He received an initial payment of $1.75 per bushel and final payment of 61¢ per bushel. What was his gross receipt for his beans?

Answer: ________

14. a. What is the selling price of a $6.50 item with a 30 percent mark-up?

Answer: ________

b. What is the percent mark-up of a $8.50 item that sells for $10.70?

Answer: ________

15. The silo on Mr. Swift's farm is 16 feet in diameter and 38 feet high (inside measurements). How many cubic feet are in the silo?

Answer: ________

16. a. How many tons of silage will Mr. Swift's silo hold if a cubic foot of silage weighs 48 pounds?

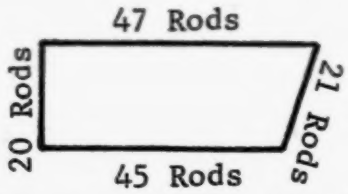
Answer: ________

b. How many bushels of snapped corn will a crib 8 feet x 8 feet x 30 feet hold? (A bushel will take up 3½ cubic feet.)

Answer:

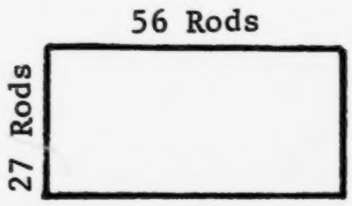
17. How many rods in the perimeter of this field?

Answer: ________


47 Rods
20 Rods
21 Rods
45 Rods

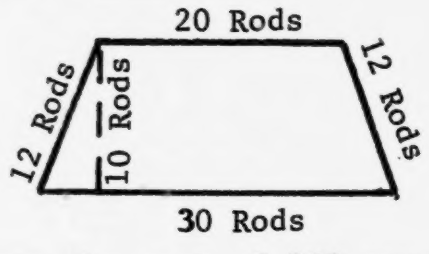
18. How many acres are in this field? (160 square rods equal an acre)

Answer: ________


56 Rods
27 Rods

19. How many acres in this field?

Answer: ________


20 Rods
12 Rods
10 Rods
12 Rods
30 Rods

20. Figure the cost of 100 pounds of this ration when ground ear corn is selling for $1.10 per bushel and tankage is $4.00 per cwt.

Answer: ________

Ground corn	465 pounds
tankage	35 pounds

21. a. If muriate of potash (50% K_2O) is selling for $56.00 per ton, what is the cost per pound of K_2O?

Answer: ________

b. If 20 percent P_2O_5 superphosphate is selling for $1.60 per 100 pounds, what is the cost per pound of P_2O_5?

Answer: ________

22. A certain grade of fertilizer costs $48.00 per ton. If 800 pounds of this fertilizer are used on one acre, what will be the cost of fertilizing a field 160 rods by 90 rods? (160 square rods = 1 acre)

Answer: ________

23. a. When 20 pounds of a complete fertilizer (such as 20-10-5) are recommended for 1,000 square feet of lawn, how many pounds of fertilizer are needed for an area 85 x 100 feet?

Answer: ________

b. When 3 pounds of fertilizer are recommended for 100 square feet of plant bed, how many pounds of fertilizer are needed for 600 feet of bed x 12 feet wide?

Answer: ________

24. How many pounds of 25% Co-Ral (wettable powder) are needed to make 25 gallons of spray containing 0.12% Co-Ral?

Answer: ________

25. How many pounds of 5% rotenone (wettable powder) are needed to make 25 gallons of spray containing 0.05% rotenone?

Answer: ________

PRE-TEST: FEEDS

1. Feed costs usually make up what percent of the total cost of livestock production? (Check one)

_____ From 25 to 50
_____ From 35 to 65
_____ From 50 to 80
_____ Over 75

2. The percent feed cost (excluding pasture) of the total cost of production is normally highest in:

_____ Feeder calf production or feeder pig production
_____ Milk production or egg production
_____ Kentucky cow and calf or milk production

3. Check the feed ingredients which are used primarily for their high energy value. (Check all that apply)

_____ Soybean meal
_____ Stover
_____ Wheat bran
_____ Corn
_____ Stilbestrol
_____ Grain sorghum

4. Check the feeds normally used as a protein supplement

_____ Oats
_____ Cottonseed meal
_____ Urea
_____ Corn and cob meal

5. Good feeding will usually prevent which of the following diseases? (Check the correct ones)

_____ Blackleg
_____ Ketosis
_____ Scours
_____ Bangs
_____ Rickets
_____ Anemia

6. Mark the following statements true or false. (Use "+" for true, and "-" for false)

_____ The cereal grains are all high in starch.
_____ The cereal grains are all high in fiber.
_____ Cereal grains are high in net energy.
_____ Of the cereal grains corn and oats are the two highest in energy.

7. Corn is: (Mark true or false)

_____ An excellent feed
_____ High in protein
_____ High in calcium content
_____ Low in digestible nutrients

8. Below is a list of feed ingredients with their percents of protein given at the right. Put the correct percents by the feeds in the list.

_____ Shelled corn
_____ Tankage
_____ Soybean meal
_____ Oats
_____ Corn and cob meal
_____ Wheat bran
_____ Linseed meal

60
44
35
16
12
9
7

9. Match the following statements with the number by the appropriate class of animals.

_____ Needs a large amount of high energy feed
_____ Can justify a high cost feed
_____ Need a concentrate ration rather than high in protein
_____ Ration must be high in energy and low in cost

1. Baby pigs
2. Producing milk cows
3. Finishing steers
4. Finishing pigs

10. Below are listed some different classes of livestock and some typical feeds. Match them by placing the numbers of the feeds by the livestock with which it would typically be used.

_____ Wintering beef calves on low quality roughage and a small amount of grain
_____ Growing pigs from 40 to 100 pounds that are receiving corn and soybean meal
_____ Finishing steers
_____ Cage layers

1. A complete ration
2. Vitamin & mineral premix
3. Cottonseed meal
4. Corn

11. Check the ingredients that are considered feed additives. (Check all that apply)

_____ Protein
_____ Synthetic vitamins
_____ Penicillin
_____ Arsenicals
_____ Soybean meal
_____ Corn gluten
_____ Stilbestrol

12. Name three types of conveyors used in moving feeds.

____

____

____

13. A complete ration is one that: (Check the best answer)

_____ Contains all the major nutrients
_____ Contains both concentrate and roughage
_____ Will sustain life
_____ Meets the needs of all major classes of livestock

14. Name four ways of physically changing feed particles in size or other characteristics.

____

____

____

____

15. Match the following

_____ A material distributed as a feed or for mixing in a feed
_____ Each batch is mixed according to the instructions of the livestock producer
_____ Feeds that are high in energy and digestible nutrients and low in fiber
_____ A material added to a basic ration for the specific purpose of correcting a deficiency
_____ The separate materials or constituents making up a feed
_____ A substance, other than a basic feedstuff, used to improve the quality of feed

1. Customer formula feed
2. Concentrate
3. Supplement
4. Ingredients
5. Commercial feed
6. Additive

16. Match the following

_____ Aureomycin
_____ Cottonseed cake
_____ Bone meal
_____ Stilbestrol

1. Protein supplement
2. Hormone
3. Antibiotic
4. Mineral supplement

17. Match the following nutrients with the important functions listed (On following page)

_____ Carbohydrate	1.	Builds muscle
_____ Fat	2.	Develop skeleton structure
_____ Protein	3.	Provides energy
_____ Vitamins	4.	Provides energy
_____ Minerals	5.	Aids in transporting materials
_____ Water	6.	Aids in regulating body functions and health

18. What proportions of a 43 percent protein supplement and a grain containing 12 percent protein are needed to formulate a 16 percent ration?

19. Figure the percent protein in a ration containing:

    1200# of a 7 percent grain
    400# of a 12 percent grain
    400# of a 40 percent protein grain

20. A farmer brings in 1,000 pounds of corn to be crushed into corn and cob meal. How much 40 percent supplement will be needed to mix with it to get a 16 percent ration?

POST-TEST: FEEDS

1. Mark the following true or false ("+" for true, "-" for false)

_____ The higher the cost of the ration, the higher will be the rate of production.
_____ Feed costs normally make up the major portion of livestock production costs.
_____ The success of livestock farmers is important to a feed and farm supply store.
_____ Adjusting to the proper ration will often improve the quality of the product.
_____ Feed dealers should get farmers to feed as high a rate of concentrate as they can.

2. Check the feeds that are used primarily for their high energy content. (TDN)

_____ Ground corn
_____ Cottonseed cake
_____ Cobs
_____ Barley
_____ Middlings

3. Check the feeds normally used as a protein supplement

_____ Grain sorghum
_____ Linseed meal
_____ Wheat bran
_____ Soybean meal
_____ Urea

4. Proper feeding will normally prevent which of the following diseases. (Check the correct ones)

_____ Brucellosis
_____ Hollow tail
_____ Little pig anemia
_____ Milk fever
_____ Rickets

5. Mark the following statements true of false

_____ Yellow corn supplies vitamin A.
_____ Corn in high in TDN.
_____ Corn is high in phosphorus.
_____ The cereal grains are high in fiber.
_____ The cereal grains are high in carbohydrates

6. Mark the following true or false

_____ Stover is low in fiber
_____ Urea should be fed free choice
_____ Oats on a pound for pound basis are better than corn

_____ Wheat bran is a poor feed.
_____ Corn is relatively high in fat content.

7. Below are some common feed ingredients with their percents of protein given at the right. Put the correct figure by each feed.

_____ Barley
_____ Oats
_____ Corn
_____ Soybean meal
_____ Wheat bran

1. 12
2. 9
3. 43
4. 16
5. 12

8. Below are common feed ingredients with percents of total digestible nutrients at the right. Put the correct figure by each feed.

_____ Corn
_____ Alfalfa hay
_____ Oats
_____ Grain sorghum
_____ Timothy hay

1. 51
2. 49
3. 80
4. 80
5. 70

9. Match the following:

_____ Need a large amount of high energy feed
_____ Usually can justify a high cost feed.
_____ Should be fed a limited ration.
_____ Need a ration high in protein.
_____ Must be provided a complete ration.

1. Producing dairy cows on poor pasture
2. Baby pigs
3. Finishing steers
4. Cage layers
5. Pregnant sows

10. Below are listed some different classes of livestock and some typical feeds. Match them by placing the numbers of the feed by the livestock with which it would typically be used.

_____ Wintering beef calves on grass, hay, and a small amount of grain
_____ Baby pigs
_____ Finishing steers
_____ Producing dairy cows on medium pasture
_____ Hogs being finished on corn

1. 16% mixed concentrate
2. Vitamin and mineral premix
3. Corn
4. Cottonseed cake
5. Soybean meal

11. Check all of the following that are considered feed additives:

_____ Fats or oils
_____ Synthetic vitamins
_____ Aureomycin
_____ Stilbestrol
_____ Urea

12. Check the ones that are considered efficient ways of moving concentrates.

_____ Pneumatic conveyor
_____ Blower
_____ Pails or scoops
_____ Sacks
_____ Bucket conveyor

13. Match the following

_____ A material distributed as a feed or for mixing in a feed.
_____ Each batch is mixed according to the instructions of the livestock producer.
_____ Feeds that are high in energy and digestible nutrients and low in fiber.
_____ A material added to a basic ration for the specific purpose of correcting a deficiency.
_____ The separate materials or constituents making up a feed.
_____ A substance, other than a basic feedstuff, used to improve the quality of feed.

1. Customer formula feed
2. Concentrate
3. Supplement
4. Ingredients
5. Commercial feed
6. Additive

14. Match the following

_____ Urea
_____ Stilbestrol
_____ Carotene
_____ B-12
_____ Fat

1. Protein supplement
2. Vitamin A
3. Hormone
4. Synthetic vitamin
5. Oil

15. Mark true or false

_____ Carbohydrates have 2¼ times as much energy as fats.
_____ The basis elements in carbohydrates are carbon, hydrogen, oxygen, and nitrogen.
_____ The basic elements in fats are carbon, hydrogen, and oxygen.
_____ The basic elements in proteins are carbon, hydrogen, and oxygen.
_____ Proteins can replace carbohydrates from a nutritive standpoint.

16. Match the following

_____ Protein
_____ Vitamin D
_____ Iron
_____ Carbohydrates
_____ Stilbestrol

1. Prevents rickets
2. Grows hair
3. Carries oxygen
4. Good source of energy
5. Increases feed efficiency

17. What proportions of a 37 percent protein supplement and a grain containing 8 percent protein are needed to give a 12 percent ration?

18. Figure the percent of protein in the following mixture.

1000# of an 8% grain
700# of a 16% ingredient
300# of an 43% supplement

19. Which is the best buy for a farmer to get a 16% protein ration? Circle the correct answer.

(a) Corn @ $1.25 per bushel
Soybean meal @ $80.00 per ton

(b) Grain sorghum @ $2.10 per hundred
41% mixed supplement @ $83.00 per ton

20. Give five reasons why an employee in a farm supply store needs to be very familiar with feeds.

PRE-TEST: SEEDS

1. The proportion of the annual production costs of the average farmer, spent for seed, is about (check one)

_____ 2 percent
_____ 5 percent
_____ 10 percent
_____ 20 percent

2. _____ Seeds that meet purity and other specifications for food use are suitable to plant (true or false).

3. Seed selection can be most effectively made by (check one)

_____ Carefully looking at the seed
_____ Running a germination test
_____ Knowing the man who grew the seed
_____ Reading and understanding the seed tag

4. Seeds have germinated with an estimated life of (check one)

_____ 50 years
_____ 100 years
_____ 500 years
_____ 1,000 years
_____ 2,000 years

5. The two essential organs in a flower to produce seed are (check the two)

_____ Stamen
_____ Anther
_____ Filament
_____ Pollen
_____ Pistil
_____ Petals
_____ Sepals

6. _____ The plant breeder performs the most important role in seed production (true or false).

7. _____ Certified seed is produced only from foundation seed, registered or certified seed (true or false).

8. The purpose of the Kentucky Seed Law is to (check one):

_____ Protect the seed dealer from unfair competition
_____ Keep foreign seed off the market
_____ Enable the farmer and others to know what is in the seed they purchase
_____ Collect revenue from the sale of seeds

9. _____ Seed may be sold by a farmer at home without seed tags (true or false).

10. Match the following seed groups with the proper colored official tag (a color may be used more than one time).

_____ Unmixed alfalfas
_____ Unmixed clovers
_____ Unmixed grasses
_____ Cereal crops
_____ Garden and truck crops
_____ Seed mixtures

1. Form A Manila
2. Form B Yellow
3. Form C Green
4. Red tag

11. Seed labels cost per 100 pounds of seed (check one):

_____ 2 cents
_____ 4 cents
_____ 6 cents
_____ 8 cents

12. _____ Seed life is increased for most kinds of seed if stored in a dry, cold place (true or false).

13. _____ Quality in seed is affected very little by the type of container or package in which the seed is stored and marketed (true or false).

14. _____ Increased labor costs is a problem in handling seed in bulk (true or false).

15. A seed salesman or buyer should be able to identify some seeds by physical appearance (check 8 of the following that can be readily identified).

_____ Corn
_____ Red clover
_____ Alfalfa
_____ Wheat
_____ Rye
_____ Barley
_____ Soybeans
_____ Fescue

_____ Vetch
_____ White clover
_____ Blue grass
_____ Redtop
_____ Rye grass
_____ Garden peas
_____ Oats
_____ Cucumbers

16. The following mixtures are often used for the purposes listed at the right. Match them.

_____ Timothy and red clover
_____ Blue grass and white clover
_____ Wheat and vetch
_____ Fescue and ladino clover

1. Pasture
2. Hay crop
3. Lawn
4. Cover crop

17. Most seeds are sold by (check one)

_____ Pint
_____ Pound
_____ Bushel
_____ Bag
_____ Package

18. _____ Test weight and legal weight of seed are the same thing (true or false).

19. _____ Chemical treatment of seeds often makes them unsuitable for feed or food use (true or false).

20. _____ All seeds need a finely prepared seed bed (true or false).

POST-TEST: SEEDS

1. _____ Seed is one of the high cost items in farming (true or false).

2. _____ You can select good seed on the basis of its general appearance (true or false).

3. Adapted varieties of seed are: (check one)

_____ Seed that have been imported
_____ Seed that grow well under local conditions
_____ Seed that produce the most desirable crop
_____ Seed that mature early

4. Most agricultural seeds undergo an extreme drop in viability after: (check one)

_____ 1 year
_____ 4 years
_____ 7 years
_____ 10 years

5. Two male parts of a flower are (check only two)

_____ pistil
_____ petals
_____ pollen
_____ anther
_____ ovule
_____ sepals
_____ stamen

6. The foundation seed grower produces seed for sale to (check one)

_____ The plant breeder
_____ Seed stores
_____ Certified seed growers
_____ General farmers

7. Certification of seed in Kentucky and many other states is done by (check one).

_____ Department of Commerce
_____ Department of Agriculture
_____ The Agricultural Experiment Station
_____ Seed Dealers Association

8. _____ All agricultural seeds sold in lots of one pound or more must bear an official label or seed tag (true or false).

9. Seed must be labeled a mixture if it contains more than:

_____ 2 percent
_____ 5 percent
_____ 10 percent
_____ 20 percent of another kind of seed (check one)

10. Seed labels are issued in denominations of (check the appropriate issues):

_____ 1 pound
_____ 5 pounds
_____ 10 pounds
_____ 25 pounds
_____ 50 pounds
_____ 75 pounds
_____ 100 pounds
_____ 150 pounds

11. In seed storage the major weather problem is (check one)

_____ Temperature
_____ Moisture

12. _____ Moisture and temperature conditions should be kept fairly constant for long seed life (true or false).

13. _____ The most important feature in selecting seed containers is to select one that will stand rough handling (true or false).

14. _____ Contamination and mistaken identity constitutes a problem in handling seed in bulk (true or false).

15. Following is a list of common field crops and a list containing a variety recommended for each crop. Match the variety name with the crop.

_____ Corn
_____ Barley
_____ Rye
_____ Fescue
_____ Alfalfa
_____ Red clover
_____ White clover
_____ Lespedeza

1. Atlantic
2. US 13
3. Ladino
4. Kenland
5. Ky. 31
6. Kenbar
7. Balbo
8. Korean

16. Seasons and normal seeding months for the following crops are:

Crop	Season	Months	
Corn	_____	_____	_____
Small grains	_____	_____	_____
Grasses	Fall	_____	_____
	Winter	_____	_____
Alfalfa and Red Clover	_____	_____	_____
	_____	_____	_____

17. ____ The test weight of seed is the amount that a measured quantity (bushel, pint, etc.) of a given lot of seed weighs (true or false.)

18. ____ Legume seed that have been inoculated are immune to certain diseases (true or false).

19. ____ Lime needs of legumes are greater than the needs of grasses (true or false).

20. ____ In general the depth seed should be covered is in direct proportion to the size of the seed (true or false).

PRE-TEST: FERTILIZERS

1. Approximately how much fertilizer is used in Kentucky each year? (Check one)

_____ 650,000 tons
_____ 250,000 tons
_____ 100,000 tons
_____ 50,000 tons

2. A deficiency in one nutrient may limit crop yields even though the other nutrients are available in sufficient amounts for high yields. (Check true or false)

_____ True
_____ False

3. What is the desirable pH range for high yields of alfalfa? (Check one)

_____ 3.5 -- 4.0
_____ 4.5 -- 5.0
_____ 5.5 -- 6.0
_____ 6.5 -- 7.0

4. How deep should a soil sample be taken? (Check one)

_____ Four to five inches
_____ Six to seven inches
_____ Eight to nine inches

5. What is meant by: "available nutrient"? (Give answer in one sentence)

6. What materials may be used in supplying nutrients to the soil? (List three)

1. ______________________________
2. ______________________________
3. ______________________________

7. Calculate the percent of plant food in the following: How much 20 percent superphosphate is required to supply 180 lbs. of P_2O_5?

Answer: ________

8. If 100 lbs. of fertilizer contains 20 lbs. of P_2O_5, how much actual phosphorus is in it? (Calculate)

Answer: ________

9. Name the best way to determine the amount of available plant nutrients in the soil.

10. What are trace elements?

11. Why is it important to analyze a farmer's credit potential when you are planning his fertilizer program? (Give two reasons)

1. ______________________________
2. ______________________________

12. Calculate the following order: (Show figures below)

2½ tons of a 10-10-10 fertilizer @ $55.00 per ton
2¼ tons of a 20% Superphosphorus fertilizer @ $42.50 per ton
½ ton of Ammonium Nitrate @ $3.90 per 100 pounds

13. Name three advantages of using commercial fertilizer.

1. ______________________________
2. ______________________________
3. ______________________________

14. The nutrients in which soils are most likely to be deficient are: (Four)

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

15. Name five nutrients which come from the soil.

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________

16. What percent of phosphorus in the soil is available each year? (Check one)

_____ 2 percent
_____ 1 percent
_____ .25 percent
_____ 10 percent

17. Which is the cheaper fertilizer and how much cheaper based on nutrients bought:

    a. 3-12-12 fertilizer @ $36.00 per ton

    b. 6-24-24 fertilizer @ $60.00 per ton

POST-TEST: FERTILIZERS

1. List three chemical elements used in fertilizers

   1. ____________________
   2. ____________________
   3. ____________________

2. How many pounds of nitrogen (N) is needed to produce 100 bushels of corn (check one):

   _____ 50 lbs.
   _____ 100 lbs.
   _____ 150 lbs.
   _____ 200 lbs.

3. When would you recommend a farmer take a soil sample from the land where tobacco is to be grown? (Check one)

   _____ Spring
   _____ Fall

4. Name four things needed in taking a soil sample.

   1. ____________________
   2. ____________________
   3. ____________________
   4. ____________________

5. Name the sources of all nutrients.

   1. ____________________
   2. ____________________
   3. ____________________

6. What is the minimum grade of fertilizer to recommend when the ratio is 1-2-2?

   Answer:

7. The cost of bulk fertilizer is usually cheaper than bag fertilizer. (Check true or false)

   _____ True
   _____ False

8. What is a complete fertilizer?

9. Name two liming materials.

1. ____________________
2. ____________________

10. Give two advantages of using high analysis fertilizers.

1. ____________________
2. ____________________

11. Why should you as a fertilizer salesman know how to adjust fertilizer equipment to a specific rate per acre? (Give two reasons)

1. ____________________
2. ____________________

12. How much does the nitrogen cost in a ton of 6-6-18 fertilizer if each pound of nitrogen costs 15 cents? (Show calculations)

13. Name 12 of the plant nutrients

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________

14. There is usually more potassium available in the soil than phosphorus or nitrogen. (True or false)

_____ True
_____ False

15. What percent of the nitrogen in the soil is available each year? (Check one)

_____ 2 percent
_____ 1 percent
_____ .25 percent
_____ 10 percent

16. What percent of potassium in the soil is available each year? (Check one)

_____ 2 percent
_____ 1 percent
_____ .25 percent
_____ 10 percent

17. Explain the steps involved in taking a soil sample. (Assume you are explaining the procedure to a farmer who does not know how.)

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________
7. ______________________________
8. ______________________________

PRE-TEST: AGRICULTURAL CHEMICALS

1. About how many dollars do farmers in the United States lose each year from damages done to crops by insects and diseases?

   Check only one: ___3 billion dollars ___3 million dollars ___$300,000

2. Name three ways that insects and diseases affect crops, which in turn lower the farmer's income.

   - ______________________________
   - ______________________________
   - ______________________________

3. What, in your opinion, is the average loss, in dollars, per acre of corn because of weeds?

   Check only one: ___$5 - $10 ___$12 - $20 ___$25 - $30

4. Name three ways in which parasites and diseases in animals lower the income of farmers to a significant degree.

   - ______________________________
   - ______________________________
   - ______________________________

5. In using agricultural chemicals, how important is it to follow the safety precautions on the container? Why?

   - ______________________________
   - ______________________________
   - ______________________________

6. Check the agricultural chemicals (insecticides, fungicides, or herbicides) listed below in which care must be used in handling or breathing.

   ___ Rotenone
   ___ Parathion
   ___ Methoxychlor
   ___ Malathion
   ___ DDT
   ___ Endrin
   ___ Smear 62
   ___ Co-Ral

7. When selling agricultural chemicals to customers, what should you always do when asked: "How should I mix this, or how much of this should I use?"

   - ______________________________
   - ______________________________

8. On what does a successful plant disease-control program largely depend? Select only one:

_____ Being able to identify the different diseases and then know what materials to use.

_____ Inspecting plants daily for diseases and when disease strikes - treat.

_____ Prevention -- by applying protective chemical coating over leaves and stems.

9. Name three common biting insects.

- ______________________________
- ______________________________
- ______________________________

10. Name two common sucking insects

- ______________________________
- ______________________________

11. What is the difference in the kind of poison you apply to biting insects and sucking insects?

- ____

____

12. Name two internal parasites that bother farm animals, and describe how animals look that are infected with the parasite.

-- ____________________________ - ______________________________________

-- ____________________________ - ______________________________________

13. If you found a leaky or broken spray container (box, bottle, or can) in the store or at home, what should you do first? How would you handle the container if the materials were poisonous?

- ____
- ____
- ____

14. One pound of 5% rotenone (wettable powder) is mixed with 10 gallons of water. What percent rotenone is in the spray? Show calculations here: (Circle answer)

15. A farmer comes into the store and says, "I want something to control corn borers." What would you recommend? Would you point out any safety precautions? If so, what?

- ____

- ____

16. A farmer wants something to stop the spread of blue mold in his tobacco plant bed. What would you recommend?

- ____

17. A farmer is bothered with grasshoppers. What material(s) would you recommend?

- ____

18. What chemicals would you recommend for controlling horn and face flies on beef cattle?

- ____

19. A lady comes into the store and wants something to control lice and mites on her hens. What would you recommend?

- ____

20. A farmer wants to mix calcium arsenate with lindane, what would you tell him about the compatability of the two materials?

- ____

POST-TEST: AGRICULTURAL CHEMICALS

1. In general terms, how many dollars do farmers in the United States lose each year because of parasites and diseases of livestock?

   Check only one: ___700 million dollars ___1 million dollars ___$500,000

2. Name three ways that parasites and diseases affect livestock, which in turn lower the farmer's income.

   - ____
   - ____
   - ____

3. How high do you suppose the loss might be, in dollars per acre, where the weeds are bad in corn?

   Check only one: $30 - $40___ $45 - $60___ $65 - $80___

4. What areas, other than crops, on the farm might farmers find desirable to spray for weed control?

   - ____________________ - ____________________
   - ____________________ - ____________________
   - ____________________ - ____________________

5. What is the most important aspect of a livestock disease -- control program?

   Check only one:
   _____ Feeding livestock well
   _____ Knowing how to doctor animals that get sick
   _____ Having a disease-prevention program

6. Give four key rules for the safe use of agricultural chemicals.

   - ____
   - ____
   - ____
   - ____

7. How important is it to follow the manufacturer's recommendations for mixing and applying agricultural chemicals? Why? What might happen if you use too much? Too little?

   - ____
   - ____

- ____
- ____

8. Check the requirements (or principles) that govern any successful pest-control program? Check only those that apply?

_____ Spray or dust at the proper time
_____ Use a small spray or dust gun
_____ In applying, cover all parts of animal or plant that is likely to be attacked
_____ Identify the pest and then decide on material to use
_____ Use a "shotgun" pesticide to be sure that the pest is destroyed

9. Name three common biting insects

- ____________________
- ____________________
- ____________________

10. Name two common sucking insects

- ____________________
- ____________________

11. Name two insects that bother farm animals, and describe the kind(s) of damage they do:

- ________________ -- ____________________________
- ________________ -- ____________________________

12. Name five general rules (or principles) that apply in using chemicals to control insects, diseases in plants, parasites in cattle, diseases in cattle, and/or weeds.

- ____
- ____
- ____
- ____
- ____

13. How many pounds of 5% rotenone (wettable powder) are needed to make 100 gallons of spray containing 0.05% rotenone? Show calculations here: (Circle answer)

14. What is the University of Kentucky recommendation as to the mixing of insecticides in fertilizers for plant beds? For field fertilizers for tobacco? Why?

- ____

- ____

- ____

15. What would you recommend for controlling flea beetle in tobacco beds? cut worms - grubs, in the tobacco bed?

- Flea beetles ________________________________

- Cut worms __________________________________

- Grubs _____________________________________

16. Someone comes into the store and wants an all-round, all-purpose spray or dust for his garden, what should the spray or dusting materials contain?

- ____

- ____

17. What chemical(s) would you recommend for controlling weeds in corn?

- ____

18. What would you recommend for control of round worms in hogs?

- ____

19. A farmer wants something to treat mastitis in a dairy cow. What would you recommend?

- ____

20. How about mixing lime-sulfur and malathion? Is this all right? Why?

- ____

SCHEDULE A

PROGRAM IN AGRICULTURAL OCCUPATIONS

Questionnaire to be Completed by Teachers

INSTRUCTIONS: It should take you about 60 minutes to complete this questionnaire. Please respond to each item as it pertains to getting a program underway or conducting it. Respond to each item in terms of whether or not it should be done regardless of whether or not you did it, used the material, or followed the practice or procedure.

I. Deciding Whether or Not to Start a Program

Check (✓) the following groups as to degree of importance of working with in deciding whether or not to initiate a program.	Very Important	Important	Of Little Value
1. School administrators (superintendent--principal)	____	____	____
2. Guidance counselors	____	____	____
3. Agricultural business concerns	____	____	____
4. Parents of prospective students	____	____	____
5. Prospective students	____	____	____
6. ____________________________	____	____	____

Comment: ____

____

II. Working with Guidance Counselors

(Answer "yes" or "no" to each statement. If you respond "yes," then evaluate.)			Very Important	Important	Of Little Value
1. Discuss program with counselors .	Yes( )	No( )	____	____	____
2. Have counselors help select boys for the program	Yes( )	No( )	____	____	____
3. Keep counselors abreast of program throughout the year . . .	Yes( )	No( )	____	____	____

Comment: ____

____

III. Securing Parent Understanding of Program

(Answer "yes" or "no" to each statement. If you respond "yes," then evaluate.)			Very Important	Important	Of Little Value
1. Hold meeting with parents to discuss program and get an understanding of it	Yes( )	No( )	____	____	____
2. Work with boys and parents at home to develop understanding . .	Yes( )	No( )	____	____	____

			Very Important	Important	Of Little Value
3. Use a combination of parent meetings and parent-son conferences	Yes( )	No( )	____	____	____
4. Work with parents at home only to develop understanding of program.	Yes( )	No( )	____	____	____

Comment: ____

____

IV. Using Advisory Committee (Name uses to make of or help that can be rendered by an advisory committee)	Very Important	Important	Of Little Value
1. ______________________________	____	____	____
2. ______________________________	____	____	____
3. ______________________________	____	____	____
4. ______________________________	____	____	____
5. ______________________________	____	____	____
6. ______________________________	____	____	____

Comment: ____

____

V. Developing Training Situations (Stations) (Answer "yes" or "no." If you respond "yes," then evaluate.)			Very Important	Important	Of Little Value
1. Work with employers individually.	Yes( )	No( )	____	____	____
2. Work with employers in a group. .	Yes( )	No( )	____	____	____
3. Use a combination of individual and group work	Yes( )	No( )	____	____	____
4. Use members of advisory committee in lining up training situations.	Yes( )	No( )	____	____	____

Comment: ____

____

VI. Placing Boys in Training Situations (Answer "yes" or "no." If you respond "yes," then evaluate.)			Very Important	Important	Of Little Value
1. Prepare boys for interview by working with them in class on how to dress, how to talk, and how to handle self during an interview. .	Yes( )	No( )	____	____	____

				Very Important	Important	Of Little Value
2.	Let each boy, on his own, select some place to work and apply . .	Yes( )	No( )	____	____	____
3.	Teacher arrange for acceptable training stations and let each boy select the place he desires to work and then apply	Yes( )	No( )	____	____	____
4.	Teacher sent each boy to place where he thinks is best for him.	Yes( )	No( )	____	____	____
5.	Teacher let cooperating employers select boys they want to work in their business	Yes( )	No( )	____	____	____

Comment: ____

____

VII. Developing "Memorandums of Understanding" for Supervised Work Experience

(Answer "yes" or "no." If you respond "yes," then evaluate.)

Procedure to use in developing memorandum:

				Very Important	Important	Of Little Value
1.	Work with boys first, followed by parents, then employers . . .	Yes( )	No( )	____	____	____
2.	Work with parents first, followed by boys, and then employers. . .	Yes( )	No( )	____	____	____
3.	Work with employers, followed by boys, and then parents	Yes( )	No( )	____	____	____
4.	____________________ ____________________	Yes( )	No( )	____	____	____

Comment: ____

____

VIII. Providing Supervised Work Experience

How many hours of supervised work experience in an agricultural-supply business is needed to train for "job entry"? Check (✓) one.

Under 100 hours	____	200 to 249 hours	____
100 to 149 hours	____	250 to 300 hours	____
150 to 199 hours	____	Above 300 hours	____

Comment: ____

____

IX. Participating in Supervised Work Experience

1. Number of boys taking the course . . . . ________
2. Number of boys who received supervised work experience . . . ________
3. Number of boys who received adequate experience in the several jobs of the business (or department) in which they worked . . . . ________
4. Number of boys who performed routine or menial tasks most of the time . . . . ________

Comment: ____

____

X. Providing Supervision by the Teacher

Average number of hours of supervision that should be provided by the teacher:

1. One hour for each 10 hours of work experience . . . . ________
2. One hour for each 20 hours of work experience . . . . ________
3. One hour for each 30 hours of work experience . . . . ________
4. One hour for each 40 hours of work experience . . . . ________
5. One hour for each 50 hours of work experience . . . . ________

XI. Holding Conferences

	Very Important	Important	Of Little Value
How valuable is it for the teacher to hold joint conferences (with student and employer) during the supervised work experience--to talk over good features of the boys' development or things the boys should work on?	____	____	____

Comment: ____

____

XII. Using Teacher-Employer Evaluations Form

	EVALUATION		
Usefulness of EV-6 in arriving at evaluation of student performance by the:	Good	Fair	Poor
1. Teacher	____	____	____
2. Employer	____	____	____

Comment: ____

____

XIII. Teaching Procedures Used

Approximately what percent of class teaching time should be devoted to:

	Percent
1. Using problem-solving procedure	_____
2. Giving demonstrations	_____
3. Using resource people	_____
4. Rehearsing	_____
5. "Role playing"	_____
6. ____________________	_____
7. ____________________	_____
8. ____________________	_____

Comment: ____

XIV. Using Units of Instruction (Evaluate each)

	Good	Fair	Poor
1. Feeds	____	____	____
2. Seeds	____	____	____
3. Fertilizers	____	____	____
4. Agricultural Chemicals	____	____	____
5. Agricultural Mathematics	____	____	____
6. Opportunities in Agricultural Occupations . .	____	____	____
7. Orientation to Training Program	____	____	____
8. Human Relations and Personality Traits	____	____	____
9. Store Skills	____	____	____
10. Salesmanship -- Selling	____	____	____
11. Organization of Distributive Businesses . . .	____	____	____

What units should be added? ____

What units should be dropped? ______________________________________

Comment: ____

XV. Using Evaluation Forms

Evaluate in terms of aid in instructional program and in securing desirable learnings.	Good	Fair	Poor
1. EV-1 -- Self-analysis in Sales Work	____	____	____
2. EV-2 -- Self-analysis of Physical Characteristics	____	____	____
3. EV-3 -- Inventory of Personality	____	____	____
4. EV-4 -- Human Relations with Fellow Workers .	____	____	____
5. EV-5 -- Self-analysis of Work and Health Habits	____	____	____
What EV-forms should be dropped?	____	____	____
What EV-forms should be added?	____	____	____

Comment: ____

____

XVI. In your opinion, how many hours of work should a boy have in a place of business to get oriented and acquainted with his job before a "seasonal rush" or business begins to pick up? Check (✓) one.

Less than 10 hours ___
10 to 19 hours ___
20 to 29 hours ___
30 to 39 hours ___
40 to 50 hours ___
More than 50 hours ___

Comment: ______________________________

____

XVII. Using Record Book	Good	Fair	Poor
Record book was	___	___	___

Comment: ______________________________

XVIII. Affect of Program on School Work

According to your observation of the program, (including the performance of students on the job, class attitude, comments of other teachers and parents) how has it affected the attitudes of boys toward school work? Check (✓) and write in number.

			Number of Boys
--Much worse	___	. . . . .	___
--Some worse	___	. . . . .	___
--No noticeable difference . . .	___	. . . . .	___
--Some improvement	___	. . . . .	___
--Marked improvement	___	. . . . .	___

Comment: ______________________________

____

XIX. Affect of Program on Personal Traits

According to your observation of the program, how has it affected personal traits such as, dress, grooming, personal habits, work habits, character, enthusiasm, courtesy, and the like? Check (✓) and write in number.

--Much worse	___	. . . . .	___
--Some worse	___	. . . . .	___
--No noticeable difference . . .	___	. . . . .	___
--Some improvement	___	. . . . .	___
--Marked improvement	___	. . . . .	___

Comment: ______________________________

____

XX. Kind of Boy to Enroll in Program

Describe the kind of boy that should be enrolled in a program which trains for "job entry" in an agricultural supply store. (Farm background, academic, grades, personality, interests, and needs, etc.)

____

____

____

____

____

____

XXI. Comments on Program

In your opinion, what should be done to make the instructional program more sound and of high quality?

____

____

____

____

SCHEDULE B

PROGRAM IN AGRICULTURAL OCCUPATIONS

Questionnaire to be Completed by Students

INSTRUCTIONS: It should take you about 40 minutes to complete this questionnaire. You may use your notebook. Please read each question carefully and give the best answer you can.

Date ______________________________

1. Name ________________________________ School ____________________________

2. Name of agricultural business where you worked ____________________________

3. Check the major agricultural supplies sold by the business.

Feed _____
Seed _____
Fertilizer _____

Chemicals _____
Hardware _____
Machinery _____

Name others: ______________________
____

4. Who was your supervisor in the business? ______________________________
Name

5. What hours did you normally work during the week?

Hours: _______________ Days of week: _______________

6. When did you start to work? Month: _______________ Day of month: ______

7. How many hours have you worked up to now? ______ (Date _________________)

8. What different kinds of jobs did you perform in the business? Check (✓) all that you did.

Swept and dusted . . . . ( )
Washed windows . . . . ( )
Picked up trash . . . . ( )
Hauled trash away . . . . ( )
Stocked shelves . . . . ( )
Marked stock for sale . . . . . ( )
Unloaded trucks . . . . ( )
Loaded customer's car . . . . . ( )
Prepared a diagram showing location of merchandise in store . . . . ( )
Filled orders from sales slips. ( )
Unpacked merchandise . . . . . ( )
Weighed and sacked seed . . . . ( )
Assembled small equipment . . . ( )
Delivered supplies . . . . . . ( )

Took orders over phone . . ( )
Made sales . . . . ( )
Made out sales slips . . . ( )
Made out charge slips . . . ( )
Operated cash register . . ( )
Handled money . . . . ( )
Helped take inventory . . . ( )
Took soil sample . . . . . ( )
Showed customer how to take soil sample . . . . ( )
Repaired small equipment. . ( )
Ground and mixed feed . . . ( )

Name other jobs:

____
____
____

9. How did your teacher work with your parents in developing an understanding of your responsibilities in the work experience program (such as, need for you to work at time convenient to employer and need for transportation to get to and from work)? Check (✓) items below which describe what your teacher did.

a. Held a meeting of parents . . . . Yes ( ) No ( )
b. Discussed them with my parents at home when I was present . . . . Yes ( ) No ( )
c. Discussed them with my parents when I was not present . . . . Yes ( ) No ( )
d. Other ______________________________ Yes ( ) No ( )

10. Did you and your teacher develop a MEMORANDUM OF UNDERSTANDING regarding how your parents, your teacher and your employer would work with you while you were enrolled in the program? . . . . . . Yes ( ) No ( )

	VALUE RATING			
	Of Much Value	Of Some Value	Of No Value	Uncertain
11. If you and your teacher did develop a MEMORANDUM OF UNDERSTANDING, please indicate its value to you in your cooperative training program	( )	( )	( )	( )
12. What do you plan to do after you complete high school? First year ______________________ Second year ______________________				
13. To what extent has the training in agricultural occupations been helpful to you this year in terms of what you plan to do after high school?	( )	( )	( )	( )
14. How valuable to you was the job interview preparation in the classroom	( )	( )	( )	( )
15. How valuable to you was your teacher's discussions of your responsibilities to your employer and the job where you worked?	( )	( )	( )	( )

16. Describe the major benefits which you have derived from the training program this year.

a. ____
b. ____
c. ____
d. ____

17. During this year, your teacher dealt with several things, including a study of human relations, personality traits, work habits and health activities, interest in sales work, and physical characteristics. Please indicate at the right of each area how helpful the discussions and instructions were to you. Check (✓) the appropriate value for each statement.

	VALUE RATING			
Areas of Instruction	Of Much Value	Of Some Value	Of No Value	Uncertain
a. Interest in sales work	( )	( )	( )	( )
b. Physical characteristics	( )	( )	( )	( )
c. Personality traits	( )	( )	( )	( )
d. Human relations and personality traits	( )	( )	( )	( )
e. Work and health activities	( )	( )	( )	( )

18. During the year your class dealt with several units of instruction designed to prepare one to work in an agricultural business. Please evaluate each unit as to how interesting and helpful it was to you. Check (✓) the appropriate value for each unit.

Units of Instruction	Of Much Value	Of Some Value	Of No Value	Uncertain
a. Review of the Field of Agricultural Occupations	( )	( )	( )	( )
b. Orientation to the Training Program	( )	( )	( )	( )
c. Human Relations and Personality Traits	( )	( )	( )	( )
d. Store Skills	( )	( )	( )	( )
e. Salesmanship - Selling	( )	( )	( )	( )
f. Organization of Distributive Businesses	( )	( )	( )	( )
g. Agricultural Arithmetic	( )	( )	( )	( )
h. Feeds	( )	( )	( )	( )
i. Seeds	( )	( )	( )	( )
j. Fertilizers	( )	( )	( )	( )
k. Agricultural Chemicals	( )	( )	( )	( )

19. How many years of vocational agriculture have you completed prior to this year? Check only one (✓).

One ( ) Two ( ) Three ( ) Four ( )

20. Please compare this year of vocational agriculture with the other years of agriculture you completed.

21. List any comments your parents may have made regarding the program.

Favorable: ______________________________

____

____

Unfavorable: ______________________________

____

____

22. List any comments your employer may have made regarding the program.

Favorable: ______________________________

____

____

Unfavorable: ______________________________

____

____

23. Comments of other boys enrolled in the program.

____

____

____

24. Comments of other boys in vo-ag who were not enrolled in this program.

____

____

____

25. What were your feelings about the program.

Favorable: ______________________________

____

____

Unfavorable: ______________________________

____

____

SCHEDULE C

PROGRAM IN AGRICULTURAL OCCUPATIONS

Questionnaire to be Completed by Employer or Supervisor

INSTRUCTIONS: It should take you about 20 minutes to complete this questionnaire. Please read each question or statement carefully and give your frank, and objective answer. Your responses will be of much help to us in developing future programs.

Date ______________________________

1. Name of firm or business ___________________________ Location ______________
City

2. Name of person completing this questionnaire ______________________________

3. Position held in the business (owner, manager, supervisor, etc.)
____

4. Check the major items sold in the business

Feeds ____
Seeds ____
Fertilizer ____
Chemicals ____

Hardware ____
Plants ____
Others ________________
____

5. List the agriculture student(s) you have employed (worked) in the training program. Evaluate the performance of each employee. Check (✓) only one place for each boy.

Evaluation of Student Performance as an Employee

	An Excellent Employee	A Good Employee	A Fair Employee	A Poor Employee
a. ______________________________ . .	____	____	____	____
b. ______________________________ . .	____	____	____	____
c. ______________________________ . .	____	____	____	____
d. ______________________________ . .	____	____	____	____

6. In an over-all evaluation of the work performance of the boy (or boys) named above, with other boys of the same age, same schooling, and same background, how do you compare his (their) performance as an employee(s)?

	Much Better Employee	Some Better Employee	On the Average, About the Same	Some Worse Employee	Much Worse Employee	Uncertain
The boy (or boys) named above are	____	____	____	____	____	____

7. Assuming that you needed an employee in the business with only a high-school education, how would you classify the boys who have had training in agricultural occupations.

	Excellent Prospective Employee	Good Prospective Employee	Fair Prospective Employee	Poor Prospective Employee	Uncertain
Prospective employee capability	____	____	____	____	____

	Excellent	Good	Fair	Poor
8. How did you find the interest and enthusiasm of the boys in their work?	____	____	____	____

9. Please check the different kinds of jobs in which you were able to provide the boy(s) work experience.

Sweeping and dusting. . . . . ( )
Hauling trash away. . . . . . ( )
Stocking shelves. . . . . . . ( )
Marking stock for sale. . . . ( )
Unloading trucks. . . . . . . ( )
Locating merchandise in store ( )
Filling orders from sales slips( )
Unpacking merchandise . . . . ( )
Weighing and sacking seed . . ( )
Assembling small equipment. . ( )
Delivering supplies . . . . . ( )
Taking orders over phone. . . ( )
Making sales. . . . . ( )

Making out sales slips . . . ( )
Making out charge slips. . . ( )
Operating cash register. . . ( )
Handling money . . . . ( )
Helping take inventory . . . ( )
Taking soil sample . . . . . ( )
Showing customer how to take soil sample. . . . . ( )
Repairing small equipment. . ( )
Grinding and mixing feed . . ( )
Name other jobs: ________________
____
____

10. Realizing a new employee would need to get acquainted with the business (to know where certain items are located and many other things) in order to be a good employee, how many hours should he work in your business before the rush-sales season starts? Check (✓) one of the following:

Less than 10 hours ____
10 - 29 hours ____
20 - 29 hours ____
30 - 39 hours ____
40 - 49 hours ____
50 or more hours ____

11. In the program, provision was made for ____ hours of work experience to prepare a high-school boy for "job entry." (By job entry we mean to train one to a level to enter, hold, and advance in a job.)

In your opinion, how many hours of work experience should be provided a student to prepare him for job entry? Check (✓) one.

Less than 50 hours ____
50 - 100 hours ____
100 - 150 hours ____
150 - 200 hours ____
Above 200 hours ____

12. If you object to answering this question, omit it. What hourly rate did you pay your student employees?

$ __________

13. In your opinion:

Did you get your money's worth out of the students? . . Yes ( ) No ( )

Do you consider him (them) an asset? . . . . Yes ( ) No ( )

14. Did you, the teacher, and the boy ever hold a "joint conference" to deal with student-employee problems? . . Yes ( ) No ( )

15. Would you consider the "joint conference" a good approach to solving student employment problems in your business, in this type of training program? . . Yes ( ) No ( )

16. Did the teacher and student work out a MEMORANDUM OF UNDERSTANDING with you for the student's work experience, spelling out the responsibilities of each party? . . . . Yes ( ) No ( )

17. In your opinion, do you think it is desirable to have a check-list type MEMORANDUM OF UNDERSTANDING developed to make clear the responsibilities of the students, parent, teacher, and employee to prevent misunderstanding during the student-employment period . Yes ( ) No ( )

18. What areas of classroom instruction do you feel would be helpful to student employees working in your place of business? Check (✓) each area you think is important.

a. Human relations . . . . ______
b. Salesmanship and selling . . . . ______
c. Physical characteristics -- neatness, dress . . . . ______
d. Work and health habits . . . . ______
e. Store skills . . . . ______
f. Agricultural mathematics . . . . ______
g. Feeds . . . . ______
h. Seeds . . . . ______
i. Fertilizers . . . . ______
j. Agricultural chemicals . . . . ______
k. Organization of distributive businesses . . . . ______

19. To what extent should the teacher of agriculture visit a place of business where a boy is getting his work experience to observe his work habits, dress, greeting customers, waiting on customers, and the like, as a basis for improving student performance? Check (✓) one or more.

a. Should be done quite frequently at first . . . . ______
b. Should be observed about once a week for first three or four weeks . . . . ______
c. Should be observed about once a week throughout the training period . . . . ______
d. Visit and observe the boy very little . . . . ______
e. Not visit to observe the boy, but leave the supervision up to employer . . . . ______

20. Did the teacher of agriculture work with you in terms of developing an understanding of the training program?. .Yes ( ) No ( )

    -- Did he discuss with you the kinds of experiences he would like the boy(s) to get? . . . . .Yes ( ) No ( )

    -- Did he let you know what he would be working with the boys on in the class at school? . . . . .Yes ( ) No ( )

21. Please list any deficiencies or short-comings in the training program. Your comments will be appreciated.

    ____

    ____

    ____

22. Please list any strong points or features in the program. Your comments will be appreciated.

    ____

    ____

    ____